# IRON TRADE REVIEW AND WESTERN MACHINIST

A JOURNAL OF MANUFACTURES, HARDWARE, METALLURGY AND INVENTION.

VOLUME XIX. CLEVELAND, O., OCTOBER 23, 1886. NUMBER 43.



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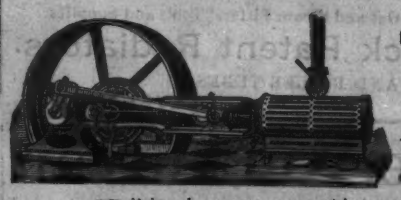

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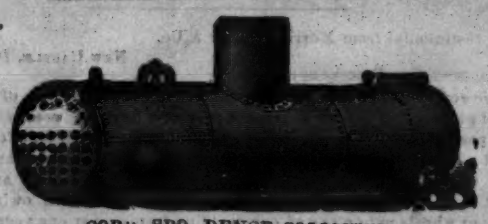

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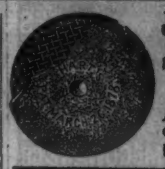

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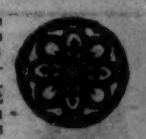

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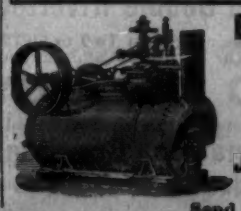

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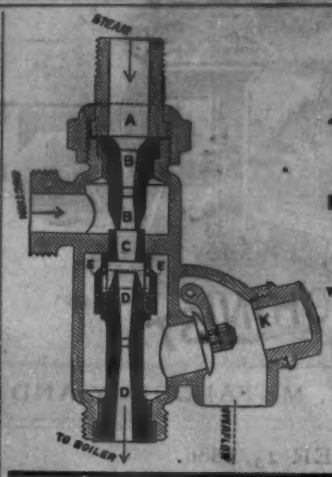


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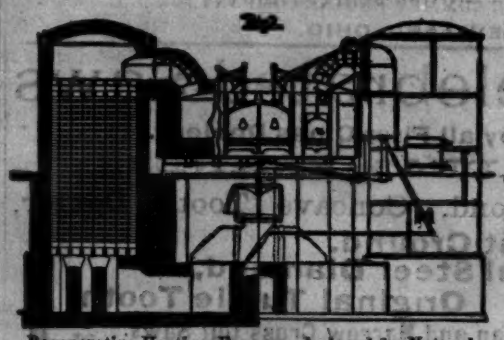

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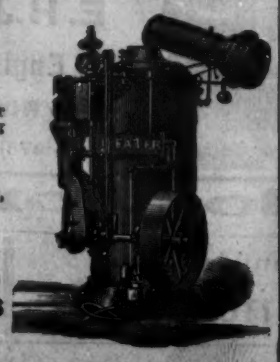

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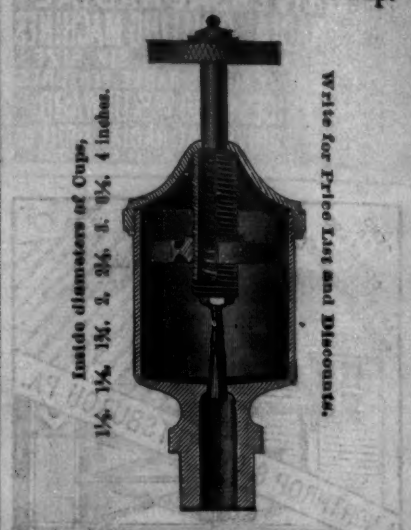


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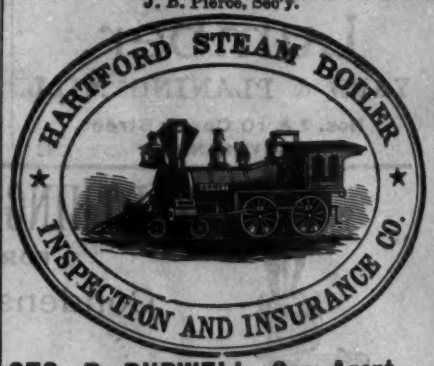


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IRON TRADE REVIEW AND WESTERN MACHINIST

VOLUME XIX. CLEVELAND, O., OCTOBER 23, 1886. NUMBER 43.

## AN IMMENSE INDUSTRIAL ENTERPRISE.

The decision of the Dueber Watch Case Manufacturing Company, of Newport, Ky., and the Hampden Watch Works, of Springfield, Mass., (controlled by Mr. Dueber) to remove to Canton, O., and the commencement of work on the extensive new buildings in the latter city, render appropriate the accompanying illustration of the Canton works as designed by Messrs. Weary & Kramer, architects, of Akron, O., and approved by Mr. Dueber. For the use of the cut we are indebted to our enterprising contemporary, the Canton *Repository*. From the architects we have obtained data for the following description which will be of interest to our readers:

The new works are to be situated on a plat of 20 acres lying just outside the city limits of Canton but closely contiguous to the business part of town. To this tract Mr. Dueber has added by purchase five acres more, which he will beautify with lakes, drives, walks, etc. To compensate him for the large loss by reason of shrinkage in business during removal, cost of transportation, etc., the citizens of Canton raised the sum of $100,000. They have also furnished him with ample switching conveniences.

The structures as designed are rich in architectural finish without being too ornate, and are imposing in every detail. They represent a series of large oblong central buildings, with two long, narrow wings extending out on either side of each, the whole relieved by graceful bays, circular towers, airy minarets and rounded ends. The general effect is that of immense exposition buildings, rather than ordinary shops; and this effect is heightened by the great expanse of windows, light being a prime necessity. Work has already begun on the building at the extreme left of the foreground, which will be occupied by the Hampden Watch Works; contracts for the still larger building (watch case works) on the right of the foreground will be let January 12, and the construction of the twin buildings in the background will be undertaken as soon thereafter as Mr. Dueber can find time to look after them.

The first building (watch works) will be 575 feet long and 270 feet deep from front of central portion to rear of engine house. The watch case works will be a duplicate of this, only 55 feet longer, or 630 feet long. The central portion will be 80x170 and five stories high. The series of wings will each be 250 feet long, and three stories high, with nearly a full story on top of that. They are only 25 feet wide in the Hampden works and 30 feet in the Dueber works—the better to insure light. All the roofs are to be of monitor section. The engine houses will each be 66x67 and will contain six boilers each. The stacks will be 150 feet high, and 16 feet in diameter at the base. The base will be octagonal in form, with 22 feet of stone-work; the stacks proper will be round. A highly artistic clock tower will stand on the extreme right; it will be 150 feet high, with a handsome look-out gallery surmounting it. Perhaps no better idea of the extent of the works can be obtained than by the following summary for the two buildings first to be erected: There will be—

About 70,000 cubic feet of stone.

Over 5,000,000 brick—which is very large considering that half the space of the out-walls will be occupied by windows.

Five acres of floors.

Twenty-five hundred windows, each 4′ 6″ wide by 10′ high, with 21,000 lights of glass.

One and three-quarter miles of shafting.

About 8,000 pulleys.

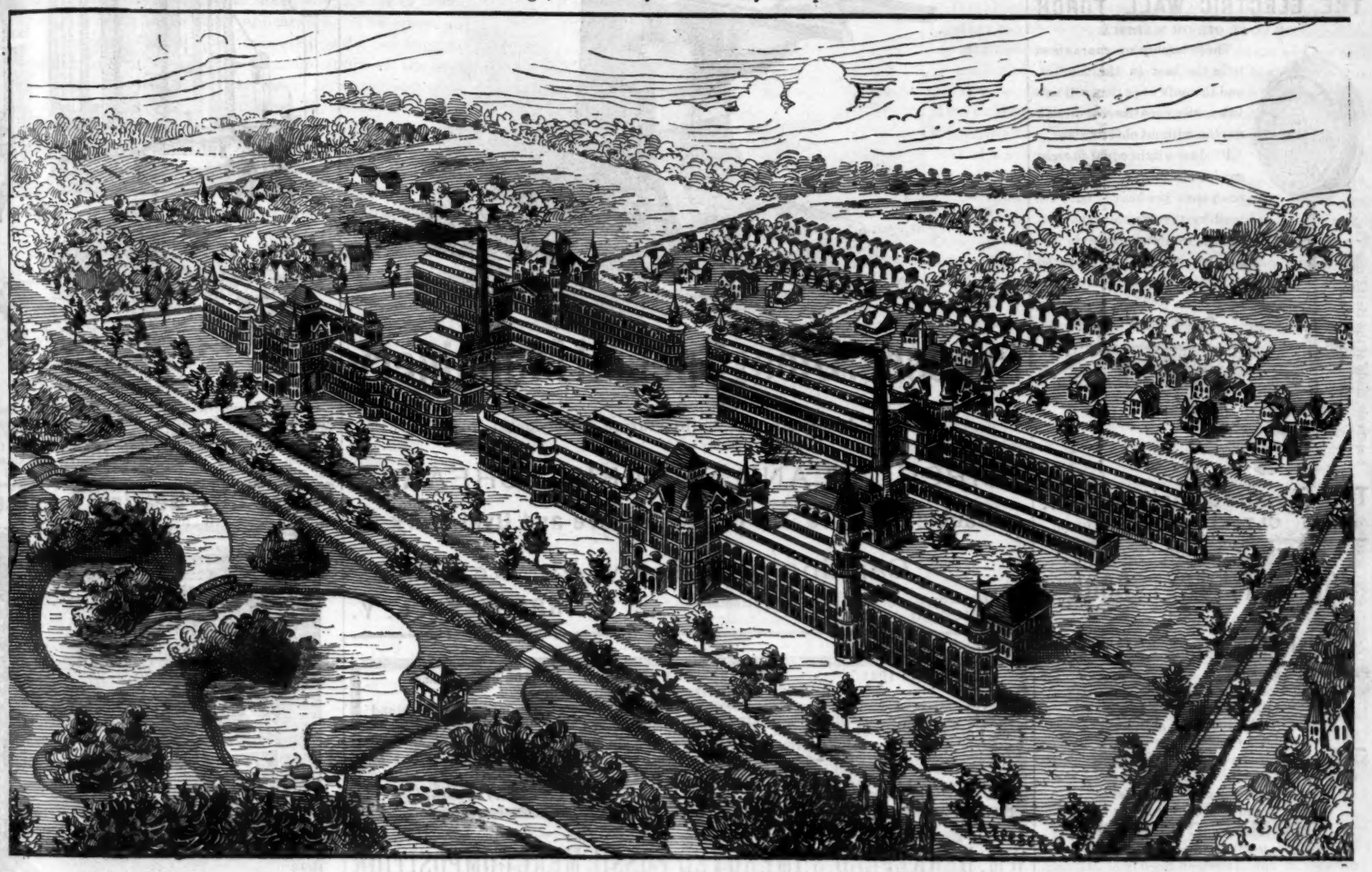
At least 15 miles of belting.

The two buildings will cost about $200,000.

About 2,000 people will be employed.

We are not informed as to the capacity of the new works, but the present works at Newport are turning out over 200,000 watch cases this year, and are crowded up to their fullest capacity.

It is said that they can sell in a month all the cases they can make in a year. Of course the Canton works will largely increase the producing capacity.



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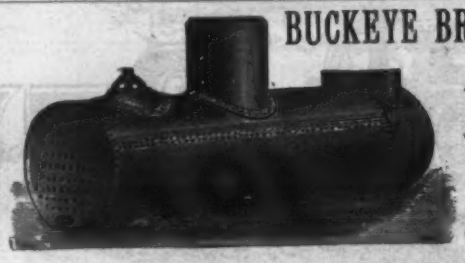

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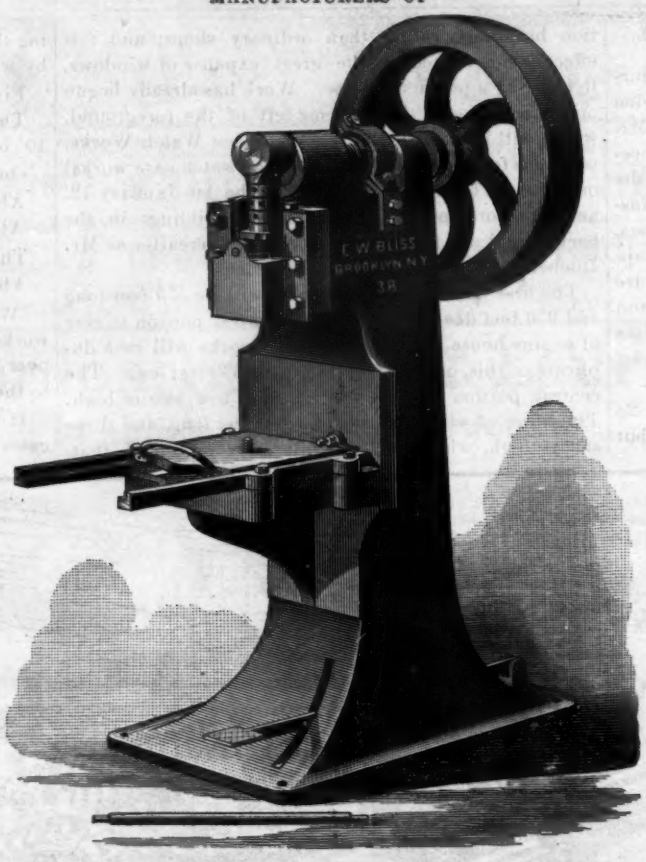


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CRUDE FOSSIL MEAL FILLING POWDER
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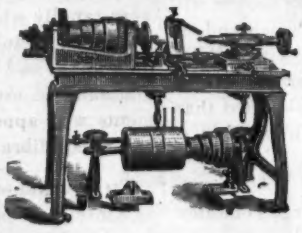

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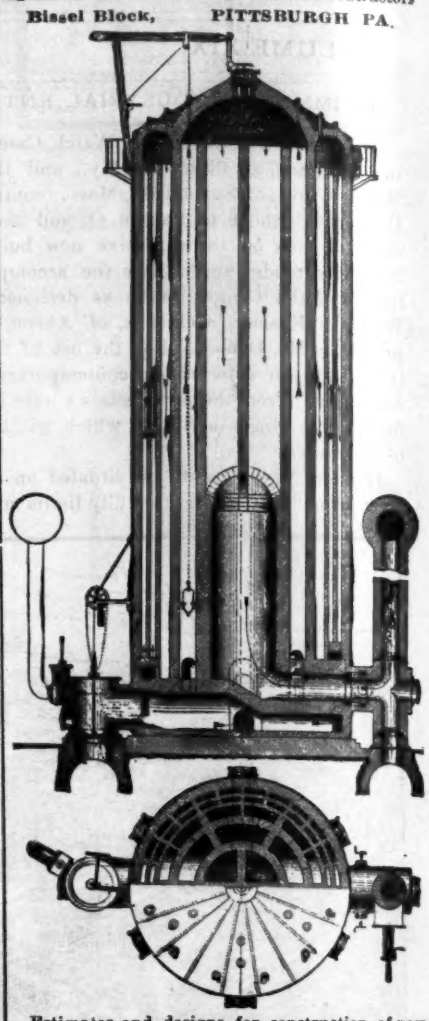

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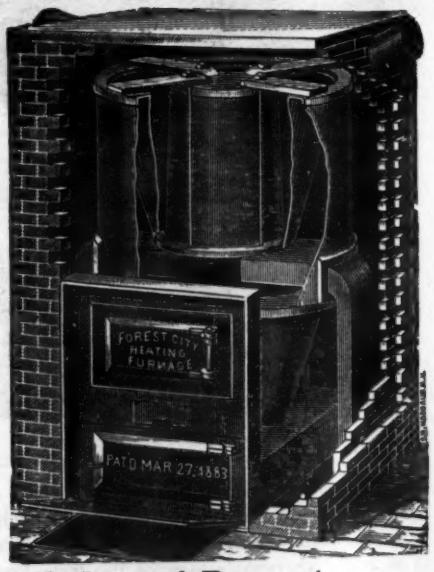


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## BLAST FURNACE PROCESS IRREGULARITIES

### A Practical Way to Avoid Them.

BY EDWARD WALSH, JR., ST. LOUIS, MO.*

[Continued from page 679.]

Mr. Howson's able paper on blast furnace economy in relation to design, read at the September (1883) meeting of the British Iron and Steel Institute (*Journal*, 1883, ii., 585) bears directly on the subject.

Mr. Howson discusses the efficacy of the hot-blast, and also the deterioration of furnaces by long use, and adds:

"I shall now, no doubt, be met by those that have been engaged in the practical management of furnaces, who will state that, in reality, the ironstone and lime are not mixed with the coke at the zone of fusion; that, in a properly working furnace, the hearth is always full of coke, and it is only the slag and reduced iron which pass the tuyeres. Well, that is bad enough, but how about a furnace that is working improperly? This brings us to the heart of the question, because it is a state of affairs that not infrequently happens. In addition to the large mass of melted matter which is constantly passing before the tuyeres, there is often both ironstone and lime in considerable quantities to be found in the hearth. It is a consequence of irregular working, and irregular working is a consequence of scaffolding. * * *

"Such being the disastrous effects of scaffolds, we come now to the question—How are they to be prevented? We know that they are, to a certain extent, prevented from forming by good materials and good heats, and, let me add, good management; but an accident may, at any time, give rise to them, and, sooner or later, they inevitably make their appearance. The question is more easily asked than answered, and I can suggest nothing better than a more accurate study of the best form of furnace than has been hitherto accorded to it. The first thing to inquire is, where do these deposits commence to take place? All experience tends to show that they begin to form somewhere on the bosh. If the bosh is steep, usually higher up; if the bosh is flat, generally lower down. It is where the materials first become sticky and lodge on a shoulder stupidly placed there to intercept them. In spite of the boast of this district [Cleveland] that it has been the pioneer in modern blast furnace constructions, I venture to say that, as regards the internal design of furnaces, it has been from beginning to end a rule-of-thumb business. The upper part, it is generally said, must widen out downwards in order to allow for the expansion of the charge. And the lower part must slope back at a considerable angle in order to relieve the hearth from pressure. This is all. The fact is, that the hearth needs no relief from pressure; it relieves itself; and the more easily the charge slips down, the better the furnace works."

[Owing to the non-arrival of electrotypes, which were telegraphed for, it is necessary to divide the present installment of Mr. Walsh's paper at this point.—ED.]

* Read at the St. Louis Meeting of the American Institute of Mining Engineers, October, 1886.

[To be continued.]

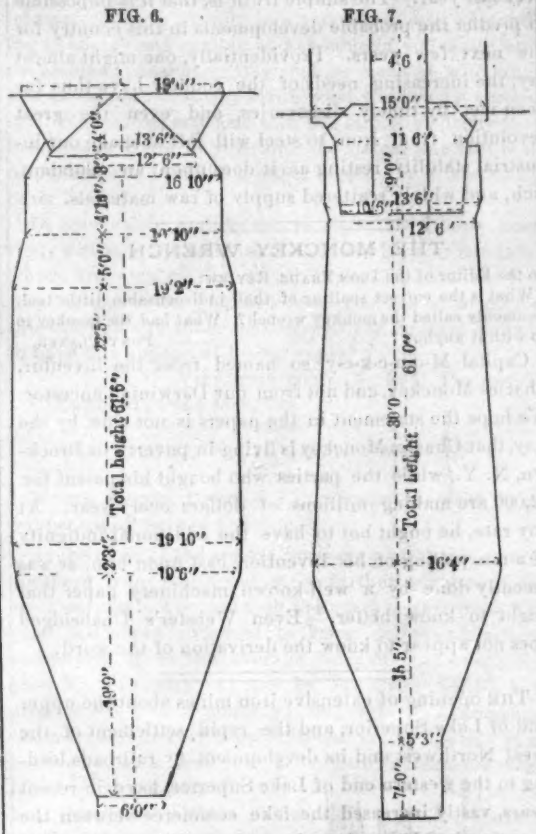
### A New Process of Welding Steel.

Mr. E. D. Wassell, of Pittsburgh, Pa., has invented a new process of welding steel, by which steel bars of any content of carbon can be piled and welded together. He has demonstrated this by making a homogeneous weld of a pile made of bars containing 65 points of carbon. The process is not applicable to bars alone, but any miscellaneous steel scraps may be put up in fagot form and welded in the same manner by the rolling process. Another feature of this method is that the carbon can be reduced to any point desired; that is to say, steel of 65 points can be reduced to 10 points in carbon while in the solid form without remelting. The process will cover the working of old rails and old steel scrap. The great usefulness of the invention consists in the fact that piles can be welded from which plates can be made as large as 10 by 4 feet, and thus, it is claimed, the method will cover the whole agricultural field and like branches of the steel industry.

## HISTORICAL VIRGINIA IRON WORKS.

Joseph R. Anderson, President; Archer Anderson, Vice-President and Treasurer; J. F. T. Anderson, Secretary; F. T. Glasgow, Superintendent Foundries and Car Shops; R. L. Archer, Superintendent Rolling Mills. Fifty years ago this business was founded by the late Francis B. Deane, but it remained to the last quarter of a century of its existence to make for it a reputation second to no iron industry in America, and this it

FIG. 6. FIG. 7.




FURNACE AT BARROW. Scale 1-16" to 1'. FURNACE AT SERAING. Scale 1-16" to 1'.

achieved during the days of the Confederacy, from 1861 to 1865. Prior to this period, however, its locomotives were running on Southern railroads, its rails and spikes were in general use, and the blasts from the steam-whistles of its portable and stationary engines were

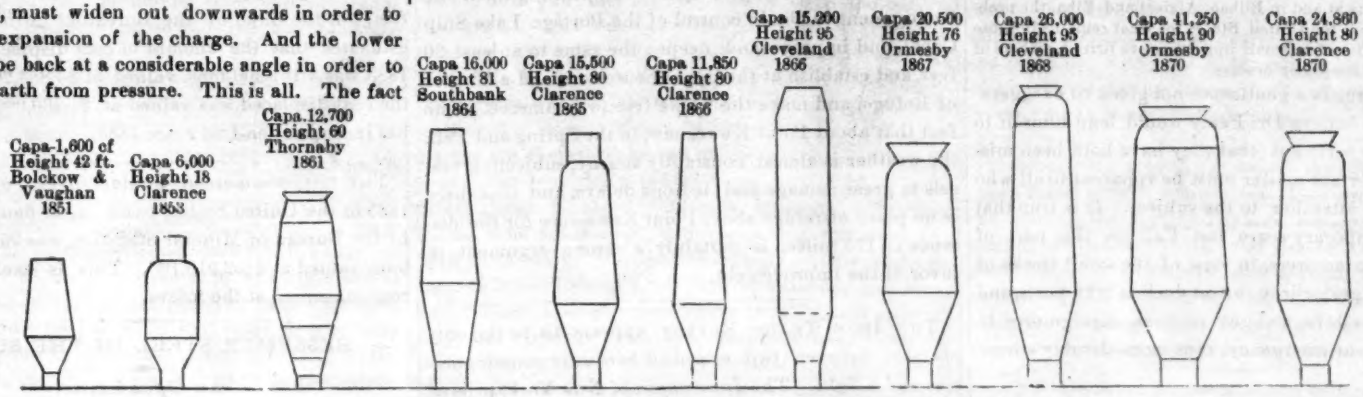



FIG. 4.—VARIOUS FORMS OF ENGLISH FURNACES.

sounded on two continents. Its propelling power was also felt on the high seas, for the United States steam frigates, Roanoke and Colorado, were furnished with engines, boilers and guns from this great establishment. The Tredegar was also among the first to build a steam launch, the United States Revenue Cutter James K. Polk had her machinery built by and fitted out at the Tredegar ship-yard. But, as previously stated, its name and fame are linked with the war history of Richmond, and is as enduring as the city itself. When communication was cut off, and Richmond was wrapped as it were with a blanket by the hosts of opponents without, when munitions of war were almost as necessary as food, then it was that the Tredegar proved a friend in need and a friend indeed. Without going further into detail, it is only necessary to say that this establishment again commenced to manufacture cannon, cannon-balls, and other munitions of war, with which they supplied the Confederate government until the city was evacuated.

Many years prior to the war period, the Tredegar company made cannon for the Federal government, and as far back as 1846, they were in a trial contest with four other foundries in this class of work, and the United States government decided in favor of the superiority of the Tredegar. It is not improbable that during the late war between the States, the cannon from this establishment belched forth fire on opposing sides.

In 1841, which was five years after the Tredegar was founded, General Joseph R. Anderson began to conduct the business, and has been its master spirit ever since. In 1867 it was incorporated, as now, with a capital stock of $1,000,000.

The capacity of the rolling mills is from 35,000 to 40,000 tons, and 25,000 tons at the four foundries per annum, of such iron as is used in the construction of large steamships, the latter being under the supervision of Robert E. Masters, well known to the iron world as a contributor to the technical press on foundry practice.

The works cover an area of 16 acres, and are among the largest in the United States. All the vast machinery is driven by water power from the James river, the capacity of which is one thousand horse power. The works give employment to from nine hundred to eighteen hundred men, according to the state of trade, and when running in full blast the pay-roll averages $50,000 per month. The product of the works consists chiefly of spikes, fish-plates, bolts, bar iron, horse and mule shoes, water and gas pipe, iron and brass castings generally, stationary, portable and marine engines and boilers, freight cars, wheels, axles, and indeed, all kinds of railroad work. Their trade is all over the United States, and in South America and Cuba.—[Industries of Richmond.

## SOME RECENT VALUABLE BOOKS.

While, no doubt, some large shops are "organized to death," and have enough red tape to run a department at Washington, it is nevertheless a fact that there is altogether too little organization among our manufacturing establishments, resulting in great waste and no end of confusion. Probably no one stands higher in this country on the subject of shop economy than Capt. Henry Metcalfe, Ordnance Department, U. S. A., and it is, therefore, with pleasure that we welcome the advent of a volume of 320 pages entitled "The Cost of Manufactures and the Administration of Workshops, Public and Private" (John Wiley & Sons, publishers, New York). While ostensibly applicable to the reorganization of an arsenal, it all the way through has a direct application to private manufactories, large and small; and its scheme of organization, forms of material cards, proposed ledger slips, wages tables, etc., ar extremely valuable and, if followed out, cannot but result in the reduction of expenses and the eliminating of the haphazard ways of doing business, now too generally in vogue.

***

So successful was Mr. Richard Henry Greenwood's "Steel and Iron," that his publishers, Messrs. Cassell & Co., Limited, of London, Paris and New York, have issued a second edition, which is now before us. It covers in succinct form the practice and theory of the several methods pursued in the manufacture of iron and steel, and of their treatment in the rolling mill, the forge, and the foundry. Though written from an English standpoint, it is cosmopolitan in its character, and will prove valuable not only to the practical iron and steel worker, but to the general reader as well.

***

To answer numerous inquiries addressed them, Messrs. Miller, Metcalf & Parkin, of the Crescent Steel Works, Pittsburgh, have issued a neat little volume, entitled "The Treatment of Steel," to which is added a chapter on "The Hardening and Tempering of Steel," by Geo. Ede, of Woolwich Arsenal, England. It is a pre-eminently practical work which we have looked over with much pleasure.

***

Wm. T. Comstock, No. 6 Astor Place, New York, has recently issued a neat book of architectural designs, entitled "Cottages," which he will send on receipt of $1.00. Prospective builders will find it advantageous to consult this work.

PATTERN shop of Bowler & Co., Cleveland, burned.

IRON TRADE REVIEW

A JOURNAL OF
MANUFACTURES, HARDWARE, METALLURGY, INVENTION
PUBLISHED WEEKLY BY
DAY & CARTER,
NOS. 16 AND 17, COAL AND IRON EXCHANGE,
130 *Water Street, Cleveland, O.*

WILSON M. DAY, EDITOR. FRANK N. CARTER, BUSINESS MANAGER.

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CLEVELAND, O., OCTOBER 23, 1886.

## OUR SUPPLY OF BESSEMER ORE.

In the very interesting and comprehensive presidential address of the learned Dr. Percy, before the recent autumnal meeting of the British Iron and Steel Institute, at London, we note with surprise the following paragraph:

Mr. Jeans has just supplied me with important information, which he has recently received from a high American authority on the subject of iron ores, and which I think it desirable should be immediately communicated to the Iron and Steel Institute. It is to the following effect. Within a few years the United States will very probably experience considerable difficulty in meeting their requirements for high-class Bessemer ores. The known quantity of such ores in the United States is far from abundant, and the same is true of ores suitable for the basic process. Hence, Bessemer steel makers in the United States have been compelled to search for foreign supplies of ore. They are now importing large quantities annually from Europe, and, according to the same American authority, the import in the course of the next two or three years will probably amount to about 2,000,000 tons or more annually. Arrangements have already been made for securing some of the best deposits of ore in Spain, apart from those of Bilbao. Considering the limited extent of the known deposits at and in Bilbao, Algiers and Elba, the probable competition of the United States for what remains in those localities is a matter of no small importance to British makers of steel by the usual Bessemer process.

Secretary Jeans is a gentleman not given to exaggeration, nor do we believe Dr. Percy would lend himself to anything of the sort; but that they have both been misled in this important matter must be apparent to all who have paid any attention to the subject. It is true that there was a temporary scare last Fall on the part of some steel manufacturers, in view of the small stocks of unsold Lake Superior iron ore on dock at lake ports, and there was, we believe, a slight rush for foreign ores to meet the apparent emergency, thus considerably stimulating imports.

In the meantime, however, at least two, and perhaps more, important Bessemer ore-producing districts have been opened up in this country, to an extent that would be incredible, were the figures not at hand to amply demonstrate the fact. No one at all familiar with the iron and steel trade, need be told that we refer to the Vermilion Lake (Minnesota) and the Gogebic (Michigan and Wisconsin) districts. These two new districts alone had sent down to lower lake ports this season up to and including October 13, 877,327 tons, and their total shipments (almost exclusively Bessemer ore) will this year reach 1,000,000 tons at least. And this from districts that last year sent down only 268,897 tons! Add to this the shipments from the old Lake Superior districts, which up to October 13 amounted to 2,038,918 tons, and will probably reach 2,250,000 tons by the close of the season, and we have *about three and a quarter million tons* of Lake Superior ore alone shipped to market this year, the great bulk of it being of the Bessemer quality. When we add the product of the Missouri, New York, New Jersey, Pennsylvania and Southern Bessemer ore mines, we have a footing too formidable to be overcome by any such wild statements as that above quoted. So far from our supplies of Bessemer ore becoming exhausted, they are each year being more and more developed.

That our importations of foreign ore will, in the course of the next two or three years, amount to 2,000,000 tons or more annually, is an assertion beyond all reason. Allowing the most liberal estimate for this year, our importations will not reach 1,000,000 tons, and this in the face of the fact that the increase has been almost phenomenal—an advance of nearly 60 per cent. over last year. The simple truth is, that it is impossible to predict the probable developments in this country for the next few years. Providentially, one might almost say, the increasing needs of the country have thus far been met by timely discoveries, and even the great revolution from iron to steel will fail to shake our industrial stability, resting as it does upon an abundant, rich, and widely scattered supply of raw materials.

## THE MONCKEY WRENCH.

To the Editor of the IRON TRADE REVIEW:

What is the correct spelling of that indispensable little tool, commonly called the monkey wrench? What had the monkey to do with it anyhow? PONY PLANER.

Capital M-o-n-c-k-e-y, so named from the inventor, Charles Monckey, and not from our Darwinian ancestor. We hope the statement in the papers is not true, by the way, that Charles Monckey is living in poverty in Brooklyn, N. Y., while the parties who bought his patent for $2,000 are making millions of dollars every year. At any rate, he ought not to have the additional indignity of a misspelling of his invention cast upon him, as was recently done by a well-known machinery paper that ought to know better. Even Webster's Unabridged does not appear to know the derivation of the word.

THE opening of extensive iron mines about the upper end of Lake Superior, and the rapid settlement of the great Northwest and its development by railroads leading to the western end of Lake Superior, have, in recent years, vastly increased the lake commerce between the upper end of Lake Superior and the East, as shown in the immense shipments of iron ore and grain from that section, and the increased demand for coal at these Lake Superior ports, which increase will undoubtedly be continuous. Of the utmost importance, therefore, is the action of the Vessel-Owners' Association and the Board of Trade of Cleveland, the past week, calling upon the Government to obtain control of the Portage Lake Ship Canal, and improve and deepen the same to at least 20 feet, and establish at the upper or western end a Harbor of Refuge, and make the whole free to commerce. The fact that about Point Keweenaw, in the Spring and Fall, the weather is almost constantly stormy, subjecting vessels to great damage and tedious delays, and that there is no place of refuge above Point Keweenaw for the distance of 175 miles, is certainly a strong argument in favor of the improvement.

THE IRON TRADE REVIEW appears to be the only obstacle between two esteemed hardware contemporaries and a fight. The *Ironmonger*, of New York, printed an article which was so worded as to give the impression that the National Association of Stove Manufacturers, or several leading firms connected therewith, proposed the establishment of retail branch houses in several cities, in order to sell their product direct to buyers. The IRON TRADE REVIEW having repeated the story on the authority of the *Ironmonger*, the *American Artisan*, of Chicago, pronounced it a "ridiculous statement," whereat the New York paper reiterates its first assertion with this important modification: that such a move is contemplated by a well-known manufacturing house. Having thus given both sides of the matter, the IRON TRADE REVIEW may be permitted to declare the match off, and return the forfeit money to the respective champions.

DURING the first nine months of 1886 the Baltimore *Manufacturers' Record* has reported over 800 new manufacturing and mining enterprises projected in the Southern States, representing in capital $83,834,200. This includes capital stock of incorporated companies as chartered, which in many cases does not of course represent actual cash investments, but it is offset in part by scores of smaller enterprises not reported. Among the new industries included in the above are 42 ice factories, 56 foundries and machine shops, 1 Bessemer steel rail mill, 16 miscellaneous iron works, 58 stove foundries, 8 agricultural implement factories, 114 mining and quarrying enterprises, 362 lumber mills, etc. The *Record* is doing good work in collecting and publishing such a vast array of interesting and valuable facts.

THE total production of coke in 1885, according to official statistics, was 5,106,696 short tons, valued at the ovens at $7,629,118. Of this, Pennsylvania produced 78 per cent., or 3,991,805 tons, valued at $4,981,656. The remainder was produced by fourteen States and Territories. The maximum production of coke in the United States was reached in 1883, when 5,464,721 tons were made. This declined in 1884 to 4,873,805 tons. The production of 1885 shows a gain upon that of 1884, being within 360,000 tons of the make in 1883.

THE Vapor Stove is not only here to stay, but it is annually increasing its popularity, and consequently its sales. From the excellent annual address of President D. A. Dangler, before the recent annual meeting of the Vapor Stove Manufacturers of the United States, at St. Louis, it appears that there is an increase in the production and sale of vapor stoves for the year 1886 amounting to fully 25 per cent., the most careful estimate placing the production for the past fiscal year at about 90,000.

WE acknowledge the courtesy of an invitation to the seventh annual meeting of the United States Association of Charcoal Iron Workers, to be held at the Continental Hotel, Philadelphia, commencing on Tuesday, November 9. The meeting has been postponed from October 26 at the request of the Philadelphia Iron Trade, who desire to give the Association a more generous welcome than was at first contemplated. Judging from the excursion programme, the session will be of much interest.

ACCORDING to the Bureau of Mineral Statistics, the production of metallic aluminium in the United States increased from 1,800 troy ounces in 1884 to 3,400 ounces in 1885, valued at $2,550. Aluminium bronze, containing 10 per cent. aluminium, was made to the amount of about 4,500 pounds, valued at $1,800.

No record is kept of the yield of natural gas in cubic feet; but the Chief of the Bureau of Mineral Statistics estimates that the amount of coal displaced by gas in 1885 was 3,161,600 tons, valued at $4,854,200. In 1884, the coal displaced was valued at $1,460,000. The yield has increased ten-fold since 1883.

THE total commercial product of coal of all kinds in 1885 in the United States, based upon figures collected by the Bureau of Mineral Statistics, was 95,834,705 long tons, valued at $152,915,108. This is exclusive of the coal consumed at the mines.

## BESSEMER STEEL IN THE SOUTH.

### An Open Letter.

To MR. G. B. WEST, Birmingham, Ala.

MY DEAR SIR:—Many people in the Northwest are anxious to obtain some specific information as to the probable cost of making Bessemer iron in the South. General statements are abundant, but these do not satisfy. I address you personally, because your interesting and valuable communications to various newspapers and trade journals show that you have given special and intelligent attention to the marvelous and most gratifying development of Southern iron industries, and, secondly, because from my pleasant personal intercourse and correspondence with you in the past, and from your general reputation I know that we shall receive courteous treatment at your hands. Hitherto, our efforts to secure the desired information through the Southern press have either been wholly ignored, or met with a discourtesy disgraceful to the editor and insulting to the section he presumes to represent, and to the age in which he lives.

Millions of dollars are invested in the North and West in steel plants, and in the underlying industries of ore and coal mining, and iron-making. If the establishment of new plants, or the discovery of new ore deposits within our own borders is a matter of interest, how much more so the origination of a new steel centre, claiming phenomenal advantages in the way of cheap

manufacture, and promising thereby formidable, if not destructive rivalry.

Now what we want to ascertain, and that as speedily as possible, is, whether these phenomenal advantages are really enjoyed by you, or whether the cost is so nearly balanced, North and South, as to render each section reasonably secure of controlling its business within proper geographical limits, without destructive competition. Further, it seems not unimportant to those proposing to invest large sums of money in new steel plants that they should have definite knowledge of what it costs other people to make steel. This inquiry to you is suggested by a recent communication of yours appearing in "the mammoth trade issue of the Montgomery (Ala.) *Advertiser*."

In connection with the Bessemer plant now being constructed at the new town of Bessemer, near Birmingham, you mention the fact that Mr. DeBardeleben has secured large tracts of Bessemer ore lands, near Cartersville, Ga., and proposes to ship them to Bessemer, a distance of 150 miles by rail. To quote exactly: "As Mr. DeBardeleben and his associates will control the transportation facilities, freight charges will only represent actual cash, and raw material will be landed at Bessemer at a low enough figure to probably justify the manufacture of Bessemer pig iron at, or even under, $10 per ton. *That price would give the steel industry of Alabama an advantage of $8 to $9 per ton on the cost of raw material over any other manufacturing district in the Union.*"

The italics are mine. We do not object to your assumption, that you can make Bessemer pig at $10, although we must ask for the items making this total, but we do very seriously object to your positive statement, italicized above, that this is $8 or $9 cheaper than can be made elsewhere. We shall not assume anything, but give you the absolute figures of cost.

Over two millions of tons of Lake Superior Bessemer ores have been sold this season at prices ranging from $4.75 to $6.25 per ton; the former for 60 per cent. and the latter for 68 per cent. ores, silica 5 to 1.5 per cent., delivered at lake ports. In three very large works, this means, into the stock houses of the furnaces, without any rail carriage.

In making the cost 8.5 cents per unit of iron, we are establishing a very full figure. With plants equipped with fire brick stoves, a *regular* consumption of less than 2,000 lbs. of coke (88 per cent. fixed carbon and 11 per cent. ash) has been secured. The market price of coke in Cleveland is $3.50 per ton (with coke $1.50 at the mines). The labor per ton is taken from yearly cost sheets, and is higher than two others inspected. The general expense and renewal items are arbitrary:

COST OF MAKING BESSEMER IRON AT LAKE ERIE PORTS.

| | | |
|---|---|---|
| 100 of iron @ 8.5c. per unit | $8.50 | |
| 1 ton coke @ 3.50 | 3.50 | |
| ½ ton limestone @ 80c | .40 | |
| Labor per ton | 1 08 | |
| | | $13.48 |
| Renewals | .50 | |
| Incidental | .25 | .75 |
| Total cost per ton | | $14.23 |

The figures for Chicago will not vary much, as the increased cost of $1 more on coke is to a certain extent offset by lower cost of all ore received from Escanaba.

You will kindly bear in mind, that these figures carry with them a profit to the coke works, a royalty on the ore in many instances, besides the profit to the miner, and ordinary rates for rail and lake transportation. If we read you correctly you put in everything at actual cost price.

Will you favor us with similar figures of cost? Will you tell us what percentages of iron and silica, not picked samples, but the shipping average, contain, and the cost per unit of iron at Bessemer, also the price of coke per ton (with its average percentages of fixed carbon and ash) at the same point; also the average cost for labor per ton, taken from some existing Birmingham company making, say, 200 tons of pig iron a day? With these before us we can come to certain conclusions.

Will you permit me to call your attention to another sentence in your commnnication which I greatly regret to see, as it smacks of the ordinary reporter rather than of the careful and intelligent writer I know you to be? You say: "As to the Bessemer iron ore, leading Pennsylvania experts not knowing where it came from, have declared samples of the Cartersville deposits to be better than anything they know of in the Lake Superior region."

This is misleading. I have seen small pieces of the Cartersville ore, but very small and far between, that were very rich, resembling the slate ore of Lake Superior, but even these were inferior to the ordinary shipments of the Champion, Republic and other mines. I have before me the averages of some twenty large shipments of the Campiom mine, which show 68.5 per cent. of iron, with .03 in phosphorus. Some of the analyses of this lot show within five-tenths of absolute purity. Of the soft ores, hundreds of thousands of tons come to market carrying over 66 per cent. iron, out of a possible 70 per cent. Cartersville may develop good mines of fair ore, but it certainly has not yet, and, we can safely predict, never will equal Lake Superior in richness of product.

As we have repeatedly said, you have a splendid mineral country, already in a marvelous way responding to energy and capital, and capable of indefinite and profitable expansion. Why not be content with what you know you have, why claim what you are not certain of? Why not be satisfied with the large prosperity that has already come to you and the larger one that is to come, and avoid attacking either directly or inferentially other localities?

In conclusion, permit me to state that I hope your reply will be in the columns of the IRON TRADE REVIEW, which are open to you at all times for anything you may have to write. If, however, you see fit to notice this through any other paper, will you be good enough to have this appear with your reply?

Very truly yours, E. C. PECHIN.

CLEVELAND, Oct., 1886.

## IS THERE A PIG IRON FAMINE?

Messrs. Rogers, Brown & Co., Cincinnati, write us as follows under date of October 18:

At the close of last week's business a 5,000-ton sale of Southern iron was noted at a further advance of 50 cents per ton. The gain in the market this week has been just about sufficient to bring delinquent sellers and buyers up to the average basis of that sale. No good No. 2 foundry can now be had under $17.00, and no good No. 1 mill under $16.00, cash, at Cincinnati. Indeed, there is very little to be had at this figure. It is believed to be a fact that all Southern furnaces combined could not furnish 500 tons No. 2 foundry, in the next thirty days without taking it from orders booked. Of No. 1 foundry there is none at all. The large sellers apparently have no desire to force prices to a much higher level, but the tendency is in that direction on account of the extreme scarcity of desirable grades. All the iron sold, so far as reported, is for actual consumption and to cover contracts already taken. As an example of the present rate of consumption, one concern in Michigan is now melting 260 tons a day, another, in Indiana, 175 tons a day; another in Illinois about the same quantity. This is exclusive of the pipe works at Louisville, St. Louis and Newport. which are melting in the aggregate about 500 tons daily. One car works is melting 150 tons. Seven foundries in the Western market are therefore known to be consuming not less than 1,250 tons daily, the average output of, at least, fifteen large furnaces. This is exclusive of rolling mills. The volume of business during the week has been curtailed by the limited supply. One Alabama furnace booked about 9,500 tons on Saturday and Monday, 9th and 11th, at prices which they deemed satisfactory, and withdrew from the market entirely. Among the Hanging Rock softeners several 1,000-ton orders have been booked, and the sellers have practically withdrawn for the present. Others, however, are selling at about $1.00 advance from lowest prices. A visit to 24 furnaces in the Mahoning and Shenango valleys reveals more uncertainty as to the future than in any other district. Most of the furnaces are buyers of all their ore and coke, and both the Lake ore and coke markets are of uncertain future. The majority of the furnaces are now furnishing either Bessemer plants or other fixed consumers with their entire product and do not figure in the general market. The remainder are sold ahead on an average of 60 days and are not disposed to sell much more at current prices. Pittsburgh shares the improvement the least of the markets west of the Alleghenies. A little stimulus was imparted to the Cincinnati local market at the close of the week by the placing of a cable contract calling for 3,100 tons of iron. It is worthy of note, however, that less than one-eighth of the iron sold in Cincinnati stops here. A meeting of Western pig iron manufacturers will be held at Pittsburgh 21st inst., to consider the situation, and some important results may develop.

HEATING FURNACES.—The Beecher Furnace Co., Cleveland, O., succeeding Beecher & Smith, have issued a neat catalogue setting forth the advantages of their system of heating.

## LATE TECHNICAL LITERATURE.

Those who have heretofore had occasion to make use of that valuable legal compendium, "Ohio Corporations Other than Municipal," by A. T. Brewer and G. A. Laubscher, of the Cleveland Bar, will be pleased to learn that the publishers, Robert Clarke & Co., of Cincinnati, have just issued from the press a second edition, considerably enlarged, and brought up to date, covering legislation and decisions during the past two years. From personal knowledge we take pleasure in saying that for all the purposes of organization or reorganization of incorporated bodies it is simply invaluable, while for the guidance of corporation officers or boards of directors, in the ordinary transaction of business, it is "as good as a lawyer." The forms given are so varied in character, and so clear and condensed, that they will no doubt serve as models in many ways not contemplated, even by the authors. No corporation, small or large, should be without a copy.

***

No gentleman in the United States is more competent to speak on the subject of cranes than is Mr. Henry R. Towne, President of the Yale & Towne Manufacturing Co., Stamford, Conn. It is with pleasure, therefore, that we welcome a neat little pocket "Album of Crane Designs," just issued by that company, containing neatly drawn illustrations of over 100 varieties, from the ordinary light jib crane to the more elaborate heavy traveling crane. Accompanying these designs is a treatise on cranes, written in Mr. Towne's well-known clear and concise style. We bespeak for it a general circulation.

***

A timely pamphlet on an important and often-neglected subject has just come from the press. It is entitled "The Prevention of Fire," and is written by Wm. Paul Gerhard, C. E., who has written much and well on house drainage and sanitary subjects in general. The present work, while not pretentious, is comprehensive and practical; and attention to its suggestions will no doubt very materially lessen the hazards from fire in large establishments. It can be obtained for 60 cents by addressing the author at 6 Astor Place, New York city.

***

Reference has heretofore been made on several occasions to the new Directory of the American Iron and Steel Association, compiled by the able and energetic General Manager, Mr. James M. Swank; but space may be here taken to say that a more careful perusal of its scope and contents speaks volumes for the painstaking care of the compiler, and leaves absolutely nothing to be said in criticism. It is as nearly perfect as any one man can make it. The price is $3, and copies can be obtained by addressing the office of the association, No. 261 South Fourth street, Philadelphia, Pa.

***

However we may differ as to the effectiveness of profit-sharing as a remedy for labor troubles, no one can take up Dr. Sedley Taylor's six essays on "Profit-sharing Between Capital and Labor" (J. Fitzgerald, publisher, 108 Chambers street, New York, price 15 cents by mail), without reading it to the end. An extract from this work, recently reproduced in these columns, gave a fair insight into its nature and scope.

### Unusual Accumulations in Boilers.

The delay in fitting out the Brooklyn for a cruise on the Asiatic station is explained in reports from the commanding officer and chief engineer received at the Navy Department on August 16. Their account of the condition of the boilers when the vessel returned to the Brooklyn Navy Yard in May last, and of the work performed upon them since that date, shows that they were not in as good condition as reported when the vessel went into commission in October, 1885. Many repairs were made and scale often removed during the eight months' cruise, in spite of which, when the vessel arrived in New York, in May last, the boilers showed an unusually large accumulation of scale for so short a cruise. The cleaning resulted in the removal of 27,000 pounds of scale, to which is to be added 4,500 pounds taken out at various times during the cruise. The following rather unusual articles to be found in a steam boiler were also taken out: One working suit, one sledge, four hand lamps, two chisel bars, two scaling hammers, three flat chisels. one piece of 1¼ inch pipe and elbow, three wooden wedges, two pieces of board, and one wrench. Some of these articles have been preserved to show the thickness of the scale deposited, and also to figure in the investigation that is likely to be instituted for the purpose of fixing the responsibility for their presence in the boilers.—[Nautical Gazette.

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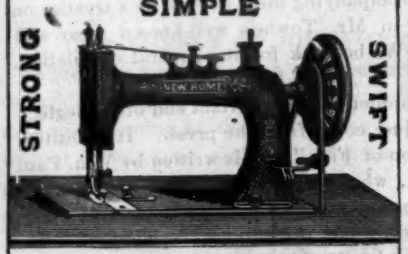

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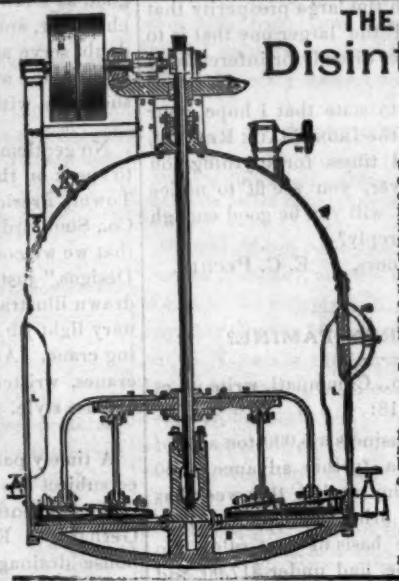

Disintegrating, Decomposing and Desulphurizing the ore under a HIGH TEMPERATURE and PRESSURE OF STEAM HEAT, with chemical action and attrition, dissolves and breaks up the chemical combination in the ores, individualizing, cleansing and separating the atoms of metal from the gangue, perfectly freeing them for amalgamation in combination with the MEECH AMALGAMATION MACHINE and process, (being the greatest combination of Amalgamation known), will successfully extract 90 per cent. of the metal from rebellious ores, such as Sulphurets, Sulphates, Sulphides, Chlorides, Bromides, Oxides, Tellurides, &c.

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This Machine will **CRUSH AND PULVERIZE GOLD AND SILVER ORES** to 20, 40 and 60 mesh fine, and from 20, 40 and 60 tons per day. The PRINCIPLES of this machine, making it superior to all others, are the peculiar concave and convex shape of the jaws, with concave and convex projections, which breaks, crumbles, stamps and pulverizes the ore with less power, wear and tear, than any other machine. Manufactured by

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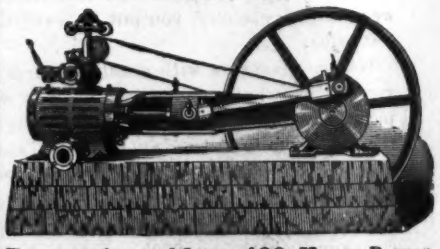

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# Industrial Notes

**Blast Furnaces:—**

It is proposed to erect an iron furnace at Selma, Ala.

The Lucinda Furnace at Norristown, Pa., resumed operations several days ago after years of idleness.

Negotiations are pending for the lease of Howen & Sons' blast furnace at Norristown, Pa., to Reading parties.

The output of the Midland blast furnace for the week ending October 9th was remarkable for one thing—its regularity. It was just forty-seven tons per day—never more, never less.—[Age of Steel, St. Louis.

The blast furnace of the Calumet Iron & Steel Co. blew in early last week, and had turned out 500 tons of iron by Saturday night.—[Industrial World, Chicago.

Mabel Furnace No. 1, of Perkins & Co., Limited, at Sharpsville, Pa., which has been undergoing extensive repairs, was successfully blown in on the 2d inst. Every furnace at the above place in now in operation.

The following is the record of the work of Crozer Furnace, Virginia, for the week ending September 25: No. 1 foundry pig iron, 322½ gross tons; No. 2 foundry pig iron, 310 gross tons; No. 3 forge pig iron, 167½ gross tons. Total, 800 gross tons. The consumption of fuel was 2,803 pounds of coke to the ton of iron made. The ores yielded 41.9 per cent. of metallic iron. The limestone used was 126 per cent. to the ton of iron made. The average pressure of the blast was 6½ pounds. The blast was supplied by one engine with 48 by 84-inch air cylinders, and one engine with 48 by 96-inch air cylinders, each running 34¾ revolutions. The average pressure of steam was 64 pounds, and the average tempe. ature of the blast was 1,242 degrees. The dimensions of the furnace are 70 feet height of stack and 16 feet diameter of bosh.

**Rolling Mills:—**

Kimberly & Co., Sharon, Pa., are fitting up their mill for the introduction of natural gas.

The puddling department of the Russia mill at Niles was put in operation last Monday, running to its fullest capacity.

Potts & Brother, iron manufacturers of Pottstown, Pa., have leased the Stony Creek Rolling Mill, at Norristown, and will put the works in operation soon.

The rolling mill of the Norton Iron Works, at Ashland, Ky., resumed operation last week after having been idle for a year and a half. The nail factory will follow suit in a few days.

The United States Iron and Tin Plate Co., at Demmler Station, near Pittsburgh, resumed operations in all departments on the 5th inst., with sufficient orders on hand to keep them busy for six months.

The Trumbull Iron Co., Niles, O., are so well satisfied with their new gas heating furnaces, which has increased their capacity about 10,000 pounds per day, that they are getting material on the ground to build another.

Mr. David Morgan, president of the Northwestern Rolling Mill Co., St. Paul, Minn., is in the city, purchasing a nine-inch train of rolls and an engine to drive the same, for his mill. He reports a great improvement in trade throughout the northwest.—[American Manufacturer, Pittsburgh.

**Foundries:—**

The Bethlehem (Pa.) Foundry and Machine Company, who are erecting large works at Bethlehem, will be ready to commence operations in a few days.

The Chicago Drop Forge and Foundry Company has been incorporated, with a capital of $200,000. Incorporators: Charles L. Brooke, Edward R. Swett and Albert J. Norton.

The name of the stock company recently reported to be organized at Staunton, Va., to establish a foundry and machine shop, is the Augusta Agricultural Works. The capital stock will be $8,000.

A town meeting was held in Caribou, Me., recently, to take action intended to encourage parties who propose to erect and operate a foundry and machine shop. It was unanimously voted to exempt or abate taxes on such property, so far as the same may be legally done.

**Machine Shops:—**

A. H. Osborn, Parkersburg, W. Va., is laying the foundation for machine shops.

The Sedgwick Machine Works Co. will erect new buildings, to cost $11,000, at Poughkeepsie, N. Y.

The Champion Nut Lock Co., of Peoria, Ill., was incorporated last week to manufacture nut locks and bolts; capital stock $28,000.

Peter Gerlach & Co., Cleveland, have booked orders the past week for 45 of their new alligator chisel tooth mill saws for California, Oregon and Washington Territory.

The American Valve and Governor Co., Chicago, has been incorporated; capital stock $100,000; incorporators, Dennis O'B. Ladd, Charles Schmid, George P. Fisher, Jr., and James H. Pierce.

The Baldwin Locomotive Works, Philadelphia, are at present extremely busy and working up to about their full capacity, turning out some 13 locomotives per week, or at the rate of fully 650 per annum.

The Baxter Electrical Motor and Manufacturing Co., capital stock $200,000, has been incorporated at Baltimore, to manufacture electrical implements and machinery, with Benson M. Greene, James D. Mason, Jr., James F. Morrison, William Baxter, Jr., William V. Logan, Leopold Strouse and Samuel Rosenthal as directors. They are doubling the capacity of their present plant and will employ 50 more hands. They contemplate erecting a large factory, to employ from 300 to 400 hands.

**Steel Works:—**

Messrs. Miller, Metcalf & Parkin (Crescent Steel Works), Pittsburgh, have perfected arrangements for the manufacture of self-hardening steel.

The Chicago Steel Works have recently made a contract with the Lewis Foundry and Machine Co., of Pittsburgh, Pa., for a complete new train of rolls, with all the latest improvements, having a capacity of fifty tons per day.

It is rumored that the Riverside Furnace Co. is contemplating the building of a steel plant on its property in the upper end of the city, but we have failed to get the report substantiated except that an effort has been made by the company to purchase additional lands in the vicinity.—[Steubenville (O.) Gazette.

Pueblo *Chieftain* reports that steel rails are being manufactured at Bessemer at the rate of about 150 tons a day, that being the present capacity of the works. The blast furnace is also being operated to the utmost extent. The iron ore for supplying it is at present being brought partly from Leadville and partly from the Hot Springs mine, on the west slope of the Sangre de Cristo range just above Villa Grove.

**Nail Mills:—**

The Belleville Crescent Nail Co. was incorporated September 24; capital stock, $15,000; incorporators, Bernhard Hartmann, Henry Rees and Peter Chause.

The Chicago Wire Nail Co., lately incorporated with a capital stock of $200,000 will soon erect extensive works. The incorporators are the following well-known gentlemen: C. F. Collot, Louis A. Fontaine and John J. Knickerbocker.

**Chances for Contracts:—**

WOOD-WORKING MACHINERY.—T. Crow, Rogers City, Mich., will build a saw mill.

Cook & Co.'s saw mill, Washburn, Wis., burned; loss, $40,000.

T. Carter & Co.'s planing mill, Seymour, Ind., burned; loss, $25,000; insurance, $7,000.

TANK WORKS.—The "Green Line" shops, at Phillipston, Pa., burned; loss, $12,500.

BRASS FOUNDRY.—A. F. Barrett will erect brass works at Canton, O.

IRON BRIDGE.—The erection of an iron bridge over the Cumberland River is being agitated at Williamsburg, Ky.

PUMP WORKS ENLARGING.—The Holly Manufacturing Co., Lockport, N. Y., will build an addition 100x165.

MINING MACHINERY.—The New Wisconsin Iron Mining Co., Ashland, Wis., has been incorporated; capital, $1,000,000.

The Conneville Coal and Railroad Co. has been incorporated at Zanesville, O., capital $40,000, by J. M. McCune and others.

COAL-HANDLING MACHINERY.—The Lake Erie terminus of the "Black Diamond" Railroad will be at Painesville, O. The road will run to Muskingum county. Col. A. E. Boone, Zanesville, O., is the projector.

WATER AND GAS PIPE.—Kane, Pa. (address E. K. Kane); Ashtabula, O. (address J. A. Manning); Pomeroy, O. (address W. E. Hysell); Burlington, Mich. (address C. F. Williams), and Escanaba, Mich. (address Alderman McKenna), are projecting water works.

The Bellevue (Ky.) Water and Fuel Gas Light Co. has been organized by W. W. Post and others; capital, $250,000.

The Covington (Ky.) City Natural Gas Co. has been incorporated by R. G. Hemingray and others; capital stock, $5,000.

The Lawrence Natural Gas Co., just incorporated at Harrisburg, Pa., by Standard Oil Co. men, will pipe gas to North Beaver, New Castle, Sharon and Greenville.

A great strike of natural gas is reported at Kokomo, Ind.

The Citizens' Oil and Gas Co. (W. Martin, secretary) has been organized at Defiance, O.; capital stock, $10,000.

The Pennsylvania Gas Co., at the head of which is Hon. Wm. G. Rose, of Cleveland, will bore for gas at Canton, O.

ELEVATORS AND HEATING AND LIGHTING APPARATUS.—The corner stone of a fine new City Hall was laid at Vincennes, Ind., October 13.

Cincinnati is to have a large armory; Schureman & Kennedy, architects.

Springfield, O., is moving for a new market house and public library building.

Hebrew synagogues are being erected at Cleveland and Zanesville, O.

A new Catholic church is being erected at Sharpsville, Pa.

**Fires:—**

The shops of the Paris (Ill.) Edge-Tool Co. were burned Oct. 14. The building and machinery cost over $20,000. No insurance.

The door-knob works of the Dibble Manufacturing Co., of Trenton, N. J., were burned to the ground, causing a loss of $15,000, with no insurance.

**Miscellaneous:—**

The Fowler Steel Car Wheel Co., of Chicago, has been incorporated.

The first wrought iron for natural gas pipe was bent at the new plant of the American Iron and Tube Company, at Youngstown, O., October 9. Saturday night the fires were lighted throughout the entire plant, and 300 men commenced on Sunday morning turning out 18-inch tubes for natural gas mains. Within a month the concern expects to nearly double its force.

The King Bridge Company, of Cleveland, is now engaged in foundation work and the preparation of material for the immense iron Central viaduct, which it has contracted to build in the city named. This immense structure is to extend from Hill street, on the North, to Abbey street, on the South, across the Cuyahoga river and flats, and Walworth run, connecting the city proper with what is known as the South Side. Its length will be 3,920 feet, with a total width of nearly 60 feet. The draw-span over the Cuyahoga river will be 236.5 feet in length. The viaduct will average about 100 feet in height above the flats, and it will cross the Cleveland & Canton, Nickel Plate, Bee Line, L. S. & M. S., N. Y., P. & O. and Valley tracks. It will cross the Nickel Plate viaduct at a height of 27 feet. There will be 63 spans in the structure resting upon masonry piers. The estimated weight of the iron to be used in it is 4,500 tons. The angles and plates are made by the Cleveland Rolling Mill Co., and the structural shapes by the Union Rolling Mill Co. It is intended for street car traffic, and is expected to be finished in March, 1888.

## LIST OF PATENTS

**Relating to Iron, Steel, Metal, Machinery, Hardware and Mining Interests.**

Reported expressly for this paper by Chas. J. Gooch, Solicitor of Patents, Washington, D. C.

BEARING DATE OCTOBER 12, 1886.

Rock crusher, J. B. Low, San Francisco, Cal.
Nut lock, B N Freeman and S. E. Whitehead, St. Louis, Mo.
Apparatus for charging blast furnaces, J. M. Gettel, Lebanon, H. C. Grittinger, Cornwall, and J. H. Killinger, Lebanon, Pa.
Rolling old rails to flat plates, J. Reese, Pittsburgh, Pa.
Rolling old rails to street rails, J. Reese, Pittsburgh Pa.
Machine for reducing ores, A. M. Rouse, Boulder, Colo.
Machine for pulverizing ores and other materials, A M. Rouse, Boulder, Colo
Art of reducing unsmelted or partly smelted ore, J. T. Wainwright, Allegheny, Pa.
Lock, C. R. Uhlmann, Peoria, Ill.
Process of manufacturing steel, J. Henderson, Bellefonte, Pa.
Art of manufacturing rail road rails, W. R. Jones, Braddock, Pa.
Lifting jack, M. C. Mesker, Occidental, Cal.
Shutter or door for mines, G. W. Nation, What Cheer, Iowa.
Wrench, W. J. Pulliam, Chico, Cal
Machine for coiling bars of metal, J. J. Anderson, Chicago, Ill.
Shaft-coupling, T. Leaman, Erie, Pa.
Oven for oil, gas, or gasoline stoves, W. Miller, Grand Rapids, Mich.
Auger, S. Burd, Bradenville, Pa.
Process of extracting metals from ores, F. M. Endlick, and N. H. Muhlenburg, Lake Valley, N. Mex
Process of separating products of lixiviation and similar compounds, F. M. Endlick, and N. H. Muhlenberg, Lake Valley, N. Mex.

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**Foundry Facings.**

CLEVELAND FACING MILLS, Foundry Supplies, Cor. Scranton & Carter Sts. 21

**File Works.**

INDUSTRY FILE WORKS, manf'rs of Files and Rasps. Old files re-cut. All kinds of Job Grinding. 38 Columbus street. 13

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CLEVELAND ROLLING MILL CO., manufacturers of Steel and Iron Wire and Steel Tire. 34

THE EBERHARD MF'G CO. manfrs of Carriage, Wagon and Saddlery Hardware. 25

**Hardwood Lumber.**

MARTIN & BARRIS, dealers in all kinds of Hardwood Lumber. 130 Central Way. 51

**Lumber.**

WOODS, JENKS & CO., manufacturers and dealers in Lumber, Lath, etc., 5 Carter street. 4

FISHER, WILSON & CO., Wholesale lumber dealers (pine & hardwood), rough and dressed lumber, timber, lath. shingles, etc. 47 Central Way. 82

POTTER, BIRDSALL & CO., dealers in rough and dressed lumber, lath and shingles. Yard and planing mill, 7 & 10 Carter St. 42

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FORD, GEO. A., Metal Pattern Maker, small machinery repaired. 15½ Frankfort St.

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CUYAHOGA STEAM FURNACE CO., build large engines for Stationary and Marine purposes. Blowing Engines for Blast Furnaces and Steel Works. Steam Pumps for Copper Mines, and Steam Helve Hammers for Forges and Bloomeries. Make all kinds of heavy Castings. Foundry and Machine Shop corner Detroit and Center Streets

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CHAPMAN, G. L., builder of Engines and Machines. Also Jobbing and Repairing.

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HATFIELD JAMES Pattern Maker. Patterns of every style made to order. 165-167 West Second Street. 66

**Hinckley, O.**

ISHAM, W. S. Tin cans of every description. Large job lots special prices. Correspondence solicited. 81

**Mansfield, O.**

MANSFIELD STEAM BOILER WORKS, Man'fr s of Steam Boilers, Oil and Water Tanks, and all kinds of Sheet Iron Work. 03

**Meadville, Pa.**

CURRY & CO. general jobbers in Castings of all kinds. 43

**Niles, O.**

REEVES BROS., Manufacturers of Boiler, Tank and Sheet Iron Work, etc. 64


**CONDIT, FULLER & CO.,**

**PIG & BAR IRON.**

153 Water Street, 92-6m Cleveland, O.

**CHARLES HIMROD & CO.**

DETROIT AND CHICAGO,

**Pig Iron.**

Sole Sales Agents for following brands Lake Superior Charcoal Iron:

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**AMERICAN SCOTCH PIG IRON**

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**BASSETT & PRESLEY,**

Successors to

W. H. McCURDY & CO.,

**BAR, BAND AND HOOP IRON,**

*Steel Boiler Plates, Tubes, Rivets, etc.*

CLEVELAND, O. 82

**Cleveland Rolling Mill Company**

Cleveland, Ohio,

Manufacturers of

**Wire of all Kinds,**

STEEL TIRE AND FORGINGS,

Galvanized and Black Sheet Iron, Steel and Iron Boiler Plate, Steel Hoops.

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**ORES AND METALS,**

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**A. PLUEMER & CO.,**

**PIG IRON.**

COR. FOURTH AND RACE STREETS,

Cincinnati, Ohio.

Chicago Office—No. 107 Dearborn Street, Room 11.

GEORGE K. HOSFORD, Manager. 30


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THE HOTCHKISS & UPSON CO. Manuf'rs. Machine, Plow & Elevator Bolts, Coach Screws. 15

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PICKANDS, MATHER & CO., Iron Ore and Pig Iron, 101 St. Clair St. 61

SANGER, A. I., wholesale Scrap Iron, Nos. 173, 175 & 177 Merwin Street. 33

**Carriage Bolts.**

THE COLWELL & COLLINS NORWAY IRON CO., manufacturers of Philadelphia Carriage and Tire Bolts. 41


J. H. OUTHWAITE. W. G. POLLOCK.

**J. H. OUTHWAITE & CO.,**

Exclusive attention given to

Lake Superior and Menominee Range

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**Minnesota Iron Co.**

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**COKE**

**FOUNDRY COKE.**

72-hour Connellsville Coke.

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Miners and Shippers of

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Mines on the Cleveland, Lorain & Wheeling R. R. Capacity, 2,000 tons daily.

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**COAL,**

**IRON ORE AND PIG IRON.**

MERCANTILE BANK BUILDING

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**Masters & Company.**

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AND METALS.

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**Dealers in Iron Ores**

from their own mines near Marquette, Lake Superior.

Rooms 4 & 5 Mercantile Bank Building.

30 CLEVELAND, O.

**Tuttle, Oglebay & Co.,**

COMMISSION DEALERS IN

**IRON ORES,**

from Marquette, Gogebic and Menominee Districts.

CLEVELAND, O.

# MARKET REVIEW.

OFFICE OF IRON TRADE REVIEW.
CLEVELAND, O., FRIDAY EVENING, October 22, 1886.

## Iron Ore.

The iron ore market is very strong, but quiet, and transactions are unfrequent. There are said to be some anxious inquirers after ore, but those who have any still to offer are holding it for some purpose or other, and say, when an opportunity offers to sell, that they prefer to keep it for their customers. We do not hear of any recent sales at a price that would cover advanced freight rates, and prices made fall short of that figure. There seems to be very little ore still unsold, and if the shipments to furnaces continue as brisk as they now are, the probabilities are that there will be very little ore left on dock by the time navigation opens in 1887. Lake freights continue firm and stationary. Shipments from upper lake ports for the season up to and including October 13th were as follows: Two Harbors, 264,384 tons; Ashland, 612,993 tons; Marquette, 725,942 tons; St. Ignace, 62,259 tons; Escanaba 1,250,717 tons. Ore is moving forward to furnaces quite freely, and 14,596 tons of ore have been received at Cleveland the past week and 29,322 tons shipped. We quote nominally as follows:

| | |
|---|---|
| No. 1 Specular and magnetic Bessemer ores per ton. | $6 25 |
| No. 1 Specular (non-Bessemer) ores per ton | 5 50 |
| Bessemer Hematites | 5 50 |
| Non-Bessemer Hematites | $4 00@4 50 |

## Pig Iron.

Pig iron has developed additional strength the past week. The volume of sales for this month will possibly fall short of last month, but prices are much better and more settled. There is a steady demand of moderate dimensions which seems to be sufficient to work off the production of furnaces, and prevent any material accumulation of stocks. Sellers are quite generally asking higher prices, and even those who are said to be shading what may be considered the market price, are demanding more money than last month. Furnaces pretty well sold up are firm in the demand for a marked advance on old rates, and some have notified their agents to take no more orders for the present at any price. $18.50 cash at furnace is said to be an average quotation for No. 1 foundry all lake ore, and sales are said to have been made at much better rates than that. $16.00 cash at furnace has been refused for a desirable order of red short mill iron, and furnaces are asking from 25 to 50 cents advance on that price. We hear of a sale of a 1,000-ton lot of red short iron at $16.55 four months at furnace. Smaller sales are reported at $16.75 cash at furnace. Charcoal irons are firmer, and sellers are asking $1 to $2 advance on old price. We revise our quotations to more nearly accord with the advancing market. We quote as follows f.o.b. cars Cleveland four months:

| | |
|---|---|
| CHARCOAL PIG IRON. | |
| Nos. 1 and 2 Lake Superior charcoal | $21 50@22 50 |
| Nos. 3 and 4 Lake Superior | 21 50@22 50 |
| Nos. 5 and 6 Lake Superior | 21 00@22 00 |
| Southern Car Wheel | 25 50@28 50 |
| BITUMINOUS AND COKE IRON. | |
| No. 1 Bessemer | $ 19 75 |
| No. 1 foundry, all lake ores | 19 25 |
| No. 2 same | 18 25 |
| No. 1 foundry, lake ores, with cinder mixture | 18 25@19 00 |
| No. 2 same | 17 25@18 00 |
| No. 1 silvery, native Ohio ores | 17 00@18 50 |
| No. 2 same | 16 00@17 00 |
| No. 1 gray forge, red short | 17 25@17 75 |
| No. 1 gray forge, neutral | 16 25@16 75 |
| No. 1 Ohio Scotch (Softener) | 18 75 |
| No. 2 Ohio Scotch " | 18 25 |

## Manufactured Iron.

The features of the manufactured iron market are generally quite encouraging. Demand for finished iron is moderately active, and prices are said to be very firm. All mills seem to be satisfactorily employed, and much difficulty is experienced in placing orders for immediate delivery. Some sellers claim to be getting $3.00 advance on Summer prices and refuse to sell on a lower basis; $1.65 is a fair quotable rate.

## Hardware.

The hardware market continues fairly active, and the past week has developed no features of special interest. The demand has varied but little in volume, and most all concerns report a satisfactory business.

NAILS.—Demand nominal and prices unchanged.

## Scrap Iron.

The scrap iron market is quite active. Demand for best grades shows a steady increase, and prices have advanced quite materially. There are fair-sized stocks in hands of dealers, but the demand keeps them constantly moving. Old iron rails show a large range in price, and, it is claimed that as high as $25 per ton has been recently obtained; $22.50 to $23.50 is said to be a fair quotation, however. Old car wheels bring from $17 to $18 per ton. Railroad scrap is held by dealers at about $20 per ton, but it is claimed that a better price has been received.

## DETROIT PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Charles Himrod & Co.

The past week has been a very active one, and prices on all grades of pig iron are steadily advancing. Manufacturers will not take orders except at higher prices than have been obtained heretofore. Consumers are willing to contract if they can do so at an advance of 50 cents per ton over their last purchase. Some furnaces are practically withdrawn from the market, as the owners do not care to sell unless they can obtain at least $2.00 per ton more than they were willing to accept 30 days ago. Very few sales of old material have been made, as sellers will not accept prices buyers are offering. The outlook for the future is very bright, and another advance is likely to occur soon. With holders very firm, we quote as follows (October 20):

Lake Superior Charcoal, all Nos. $21 50@$22 50; Lake Superior Coke, all ore, $20 50@$21 00; Lake Superior Coke, cinder mixed, $18 50@$19 50; Standard Ohio Blackband, $20 50@$21 00; Southern No. 2, $18 00@$18 50; Southern Silvery, open, $17 50@18 50; Southern Silvery, close, $17 00@$17 50; Jackson County (Ohio) Silvery $18 00@19 00; American old iron rails, $24 00@25 00; Old wheels, $17 50@18 50.

## LOUISVILLE PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Geo. H. Hull & Co.

Under a very large market and very large sales, an advance of fully one dollar per ton has been established in the general market. In fact, some high grades of car wheel iron have advanced two dollars per ton above the price at which they were offered last week. Sales have been very large, and most Southern furnaces have booked orders for a large part of their product for the next six months. Sales booked have been so heavy that most of them are disinclined to book further orders at present prices. We quote for cash in round lots as below, four months, prices being 50 cents per ton higher (Oct. 20):

PIG IRON.—Southern Coke, No. 1. Foundry, $17 50@$18 50; Southern Coke, No. 2, Foundry. $16 50@$17 50; Southern Coke, No. 2½, Foundry, $16 00@$17 00; Hanging Rock Coke No. 1, Foundry, $17 50@$18 50; Hanging Rock Charcoal, No 1, Foundry, $20 00@$21 00; Southern Charcoal, No. 1, Foundry $18 00@$19 00; Silver Grey, different grades, $15 50@$16 50; Southern Coke, No. 1, Mill Neutral, $15 50@$16 00; Southern Coke, No. 2. Mill, Neutral, $14 50@$15 00; Southern Coke, No. 1, Mill, Cold Short, $14 50@$15 50; Southern Charcoal, No. 1, Mill, $16 50@$17 00; White and Mottled, different grades, $13 00@$14 00; Southern Car Wheel, Standard Brands, $23 00@$25 00; Southern Car Wheel other brands, $20 00@$21 00; Hanging Rock, Cold Blast, $23 00@$26 00; Hanging Rock, Warm Blast, $20 00@$21 00.

## CINCINNATI PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co.

[See letter on page 697.] We quote for cash f. o. b. Cincinnati (October 18):

HOT BLAST FOUNDRY IRON.—Ohio and Southern Strong Coke, No. 1, $18 00@$19 00; Ohio and Southern Strong Coke, No. 2, $16 50@$17 50; Ohio and Southern Strong Coke, No. 3, $16 00@$17 00; Ohio Soft Stonecoal, No. 1, $17 50@$18 00; Ohio Soft Stonecoal No. 2, $16 50@$17 00; Mahoning and Shenango Valley coke, No. 1, $20 00@$21 00. CHARCOAL IRON.—Hanging Rock, No. 1, $20 00@$21 00; Hanging Rock No. 2, $19 00@$20 00; Tennessee and Alabama, No. 1, $19 00@$20 00; Tennessee and Alabama, No. 2, $17 50@18 50. FORGE.—Strong Neutral Coke, $15 50@$16 00; Mottled Coke, $13 50@$14 50, Cold Short Coke, $15 00@$15 50. CAR WHEEL MALLEABLE—Southern Car Wheel Iron, $22 00@$24 00; Hanging Rock Cold Blast, $26 00@$27 00; Hanging Rock Warm Blast $21 00@$22 00; Lake Superior Malleable, $22 00@$23 00.

Reported for the IRON TRADE REVIEW by A. Pluemer & Co.

The market continues firm, but no further advance has occurred. Foundries have sufficient work, and the prospects in every line of the iron industry are fair. All attempts to boom the market have failed, which is very fortunate for sellers as well as buyers, and the prospects for a prosperous season are good. No. 1 Foundry is somewhat scarce, but can be secured in desired quantities for a reasonable advance over prices of four weeks ago.

## CHICAGO PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co., W. W. Backman, Resident Agent.

The same tone rules the market as noted last week. Inquiries continue very numerous, and transactions are large, but limited by the capacity of sellers for supplying demands, furnace stock being almost completely sold out. The orders now taken are mainly for forward delivery; some of them run well into next year. The past week the smaller buyers have been coming in. They have been till now the slowest to respond to any feeling of higher prices. Foundries in Chicago and the adjacent manufacturing towns are taking large contracts, and in the present condition of things are unwilling to take the risk of the market, and so seek to cover for pig iron requirements. Contracts for castings now realize somewhat improved prices; the various forms of finished iron also command higher figures, and this gives a better foundation for strength for the pig iron market to build on. Lake Superior charcoal irons, having been in full supply, have moved up slowly. Sellers of good brands are now, however, asking $21.00 four months, although transactions in the past week have been in some cases below this. The Mahoning and Shenango valleys, which figure largely in this market, have felt the improved influences quite as much as the South. A careful inquiry through the districts shows that the furnaces in blast are sold ahead on average of 60 days, and prices are firm, at an average, at $18.50 for No. 1, $17.00@17.50 for No. 2, and $16.00@16.50 for No. 3, and 1 mill, cash at the furnaces, with freights to Chicago $2 per ton. The sales reported here this week have ranged in lots from 100 to 600 tons, but there have been a good many of them. We revise our quotations, which are for cash, f.o.b. cars Chicago (Oct. 16):

Charcoal Foundry:—Lake Superior, $20 00@22 50; Southern, $20 00@21 50; Hanging Rock, $21 00@22 50. Coke and Stone Coal Foundry:—Ohio Hanging Rock softeners No. 1, $19 50@20 00; Ohio Black Band softeners No. 1, $19 50@21 00; Jackson county, Ohio, softeners No. 1, $19 00@20 00; Ohio Lake Ore and Cinder softeners No. 1, $18 50@20 00; Southern coke No. 2, $18 25@18 75, No. 2½, $17 75@18 25. Car Wheel and Malleable:—Lake Superior, $20 00@22 50; Standard Southern, $23 00@26 00; Hanging Rock Cold Blast, $28 00@30 00; Hanging Rock Warm Blast, $20 00@22 00. Old Materials:—Old American Rails, $23 50@24 00; Old wheels, $17 50@18 50.

## ST. LOUIS PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers Brown & Co.

Buying has taken a fresh start in this market the past week. The leading pipe works have placed orders for five to seven thousand tons more, deliveries running into the early months of next year; some large purchases by the leading car works are also announced. These orders have been placed at full outside figures, and have established the market so firmly that when smaller buyers seek to get the prices of 10 days ago they meet with no encouragement. Reports from the South indicate that there is very little more foundry iron, either coke or charcoal, to be had in that region in the next three months at least; on the other hand, the leading buyers here, are, in the main, pretty well supplied for that period. The Missouri Pacific has given out orders for 3,600 more cars, which have been distributed among Western car works, largely increasing their requirements for crude iron. Some of the Ohio furnaces tributary to this market, being oversold, have withdrawn from the market in the week past. Offerings are light from all quarters, and it is difficult to see how business can reach any large volume during the remainder of year. We quote for cash f.o.b. cars, St. Louis (October 16):

Charcoal Foundry—Missouri (none offering) nominally, $18 00@19 00, Southern, $18 00@$20 00. Coal and Coke Foundry—No. 1 Southern, $18 50@19 00; No. 2 Southern, $17 50@18 50, Ohio Softeners, $18 00@22 00. Mill Iron—Missouri, $17 00@18 00; Southern No. 1, $16 50@17 00; No. 2, $16 00@16 50. Car Wheel and Malleable—Southern, $22 00@26 00; Lake Superior, $22 00@25 00. Scrap, etc.—Old Car Wheels, $17 00@18 00; Old Rails, $22 00@23 00; Connellsville Coke, (Frick's) $5 65.

## CHATTANOOGA PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Lowe & Tucker.

The present outlook for the future in all kinds of business is very encouraging. All that the sellers anticipated, has been realized, in the pig iron market the past week. Buyers, coming face to face with unquestionable proof of short supply in the West, have entered into a sharp contest to secure the iron offered. The boom in the nail market is being felt in Chattanooga to no little extent. Real estate is very active, and some large sales have been made the past week. We quote:

No. 1, Foundry $14 50@$15 50; No. 2, Foundry $13 50@14 00; American Scotch, $13 50@$14 00; Gray Forge, $12 00@$13 00; Car Wheel Iron, $23 00@$25 00; Ores, Red and Brown, $1 50@$2 25; Furnace Coke, $2 00@$2 30; Bar Iron, per 100 lbs, $1 75; Old rails $18 00@19 00; Old wheels, $13 00; Wrought scrap, No. 1, 70c. Wrought scrap, No. 2, 50c.; Railroad splices, $1 85; Railroad spikes, $2.25.

## TRADE CATALOGUES.

VELOCIPEDE CARS.—A very attractive catalogue has been issued by the Sheffield Velocipede Car Co., Three Rivers, Mich.

MECHANICAL STOKER.—The Brightman Stoker Co., Cleveland, O., know how to get up attractive catalogues. Their latest (in colors) is "a daisy."

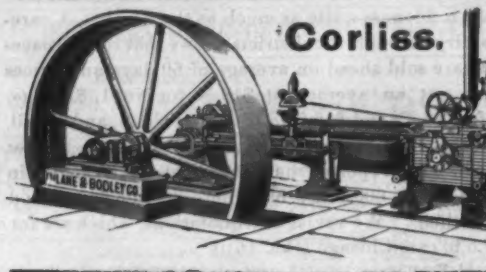
PENCILS.—Everybody is interested in the subject of pencils. Therefore send to the Jos. Dixon Crucible Co., Jersey City, N. J., for their latest catalogue.

PUMPS AND HAYING TOOLS.—F. E. Myers & Bro., Ashland, O., have built up a large trade for their specialties, which are fully set forth in their recent catalogue.

LIGHT RAILROAD SUPPLIES.—R. Woodman, 169 High street, Boston, Mass., manufactures a large variety of railroad ticket pouches, etc., judging from his catalogue.

FOUNDRY AND MACHINE WORKS.—A portly catalogue has been gotten out by the Harrisburg (Pa.) Car Manufacturing Co., showing specialties manufactured in their extensive foundry and machine department, particularly the Ide engine.

SAND MOLDING MACHINES.—"The Art of Making Molds in Sand by Machinery for Castings in Iron and Brass," is the title of a highly artistic catalogue lately issued by the Peerless Manufacturing Co., Louisville, Ky., illustrative of the workings of the Rice Sand Molding Machine.

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Manufacturers of

**AUTOMATIC CUT-OFF ENGINES,**

from heavy patterns and of unexcelled workmanship.

**STEEL BOILERS,**

**Feed Water Heaters**

SHAFTING, PULLEYS, GEARING

THE LANE & BODLEY CO.
Nos. 1 to 25 John Street.
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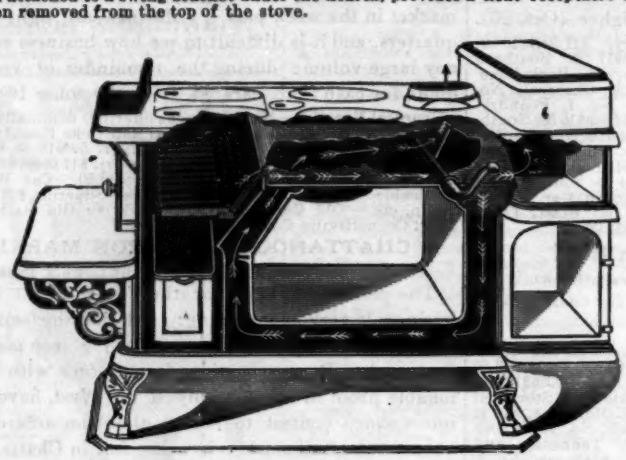
# CLIMAX COOK,

**For Soft Coal**

Is in every particular a cooking stove of the first-class. The proportions, size, style and finish are second to none. It is constructed with our Patent Oven Flues, which are far superior to the old return flue in general use. The Reservoir is of Nickeled Copper, with deep stamped pit, and is effectually heated without an extra damper. Side Shelves for the top can be put on when required. A cast Pan attached to a swing bracket under the hearth, provides a neat receptacle for the stove covers when removed from the top of the stove.



The above print will illustrate the peculiar flue in our Climax Cook Stoves. This plan insures the even distribution of the heat to all parts of the oven. No other stove or range has this flue.

**Taplin, Rice & Co.** MANUFACTURERS, **AKRON, O.**

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## Sharon Boiler Works,

(Limited)

**SHARON, PA.**

**All kinds of Boilers and Sheet Iron work.**

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## THE BUCKEYE AUTOMATIC ENGINE

**Highest Economy. Best Regulation. Superior Construction.**

These engines are constructed for heavy and continuous duty, at medium or high rotary speeds.

Illustrated Catalogue sent free.

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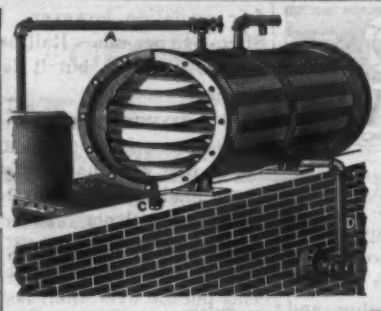

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LIVE STEAM

## Feed Water Heater

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CLEAN BOILER GUARANTEED, AND TIME GIVEN FOR TRIAL.

Durable in Construction. Efficient in Operation. Easily Cleaned.

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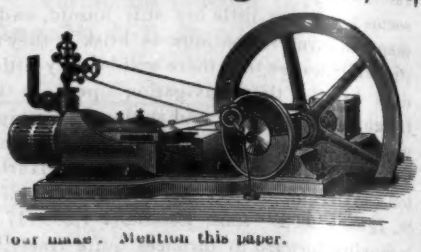
SOLE BUILDERS OF THE

**Porter - Hamilton Engine,**

50 to 500 H. P. Modern Design.

PLAIN, STRONG, EFFECTIVE, ECONOMICAL. COST LESS THAN ANY OTHER FIRST-CLASS ENGINE.

**Blast Furnace Engines on hand.**



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Also a stock of other Engines (Our make). Mention this paper.

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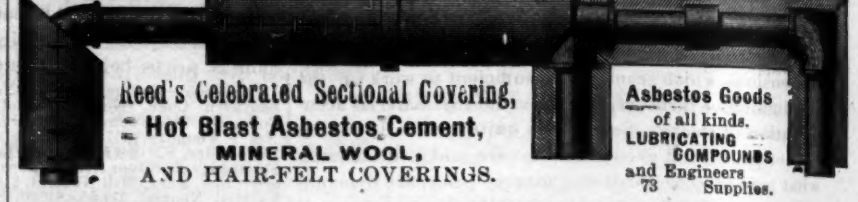
**STEAM PIPE AND BOILER COVERINGS,**

119 Water Street, PITTSBURGH, PA.

**CLIMAX BELT DRESSING**

Preserves the leather, prevents stretching and slipping, and is absolutely free from deleterious substances.



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**Hot Blast Asbestos Cement,**
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AND HAIR-FELT COVERINGS.

**Asbestos Goods** of all kinds.
**LUBRICATING COMPOUNDS** and Engineers Supplies.
73

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**SYKES' IMPROVED**
Best Roof in the World.
Suitable for all classes of Buildings.
Easy Put On.

All my Iron is Re-Rolled and Box Annealed, well Painted on both sides with Best of Paint and Pure Linseed Oil.

Send for Circular and Price List, and mention this Paper. 42

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THE GREAT STUMP AND ROCK
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SEND FOR DESCRIPTIVE PAMPHLET

Stump before a blast. | Fragments after a blast.

## STRONGEST and SAFEST EXPLOSIVE

Known to the Arts.

**POWDER, FUSE, CAPS,**

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AND ALL TOOLS FOR STUMP BLASTING,
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**The Lightest Running! The Strongest Blast! The Most Durable!**

**ADAPTED TO ALL KINDS OF WORK,**

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## HARDWARE.

### Anvils.

per lb.
Eagle, American ..... 10cts dis 20@20&5
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### Anvil Vise and Drill.

Millers Falls Co. $18 ..... dis 20
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Advance ..... $5 75
Champion ..... 8 00
Family Bay State ..... 12 00
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Gold Medal ..... 4 50
Improved Bay State ..... 30 00
Improved Bay State, with push off ..... 33 00
Jersey ..... 5 50
Little Star ..... 5 50
Model ..... 4 00
New Lightning ..... 6 00
Oriole ..... 5 00
Penn ..... 4 50
Standard ..... 4 50
Turntable ..... 5 00
Waverly ..... 4 50
White Mountain ..... 5 00

### Augers and Bits.

Snells ..... dis 15@20
Cook's Douglass Mfg. Co ..... dis 55
Russell Jennings' augers and bits, ..... dis 25
Expansive Bits, Clark's small, $13; large, $26 ..... dis 35@ 35&5
Hollow Augers, Ives' } dis 25&10@
Hollow Augers, French, Swift & Co } 25 & 10& 5
Hollow Augers, Bonney's Adjust. ₩ doz. $48 ..... dis 40&10
Hollow Augers, Stearns' Adjust. ₩ doz., $48 ..... dis 20&10
Gimlet bits ..... per gross $3.00 to $3.25
Hoits Bit Stock Drills ..... dis 25&10
Ship Augers ..... dis 15@20

### Awl Hafts.

Sewing, brass ferrule, ..... ₩ gross $3.50, dis 40&10
patent sewing, short ..... ₩ doz $1.00, dis 40&10
Patent sewing, long ..... $1.20 ₩ doz net
Patent peg, plain top, ..$10.00 ₩ gro., dis 45&10
Pat. peg, leather top, ...$12.00 ₩ gro., dis 45&10

### Awls, Brad Sets, &c.

Awls, Sewing, Common ..... ₩ gross $1.70—dis 35
Awls, Shouldered Peg ₩ gross 2.45—dis 40@40&10
Awls, Patent Peg ..... ₩ gross 63c—dis 40@40&10
Awls, Shouldered Brad ..... $2.70 ₩ gross—dis 35
Awls handled brad ..... $7.50 ₩ gro dis 45
Awls handled, scratch ..... $7.50 ₩ gro dis 35&10
Awls, socket scratch ..... $1.50 ₩ doz dis 25@30
Brad Sets, No. 42, $10.50; No. 43, $12.50 ..... dis 70&10&5
Brad Sets, Stanley's Excelsior, No, 1. $7.50 ..... dis 30&10

### Axes.

Best grades ..... ₩ doz $6.50 to $7.00
Special Brands ..... 5.50@6.00

### Axle Grease.

Frazier's, in bulk ..... keg ₩ lb 4c; pail 5c net
Frazier's, per gross ..... $39.50
Miss Axle Grease ..... $8.50 per gross
Miss Axle Grease in bulk ..... 4c per lb

### Axles.

Nos. 1 to 6 ..... dis 3¾, short bed 4½
Nos. 7 to 18 ..... dis 60&5@60 10
Nos. 19 to 22 ..... dis 70&5

### Bag Holders.

Sprengle's pat., ₩ doz $18 ..... dis 60

### Balances.

Spring balances ..... dis 50
Common 24 lb ..... ₩ doz $1.50 dis 50

### Bells.

Hand, light Brass ..... dis 75&10@75&10&5
Hand, Extra Heavy ..... dis 65& 10 to 70
Hand, White Metal ..... dis 70@70&10
Hand, Silver Chime ..... dis 25&10&5
Hand, Globe (Cone's Patent). ..... dis 25&10
Gong, Abbe's ..... dis 25&10@35
Gong, Yankee ..... dis 40&10
Gong, Barton's ..... dis 40&10@50
Pull, western ..... dis 25&10
Cow, common, wrought ..... 60&10
Cow, western ..... Sargent's List 70&10
Call ..... dis 40@40&5
Farm bells ..... ₩ lb 2¾@3c
Steel alloy, church and school ..... dis 40

### Bellows.

Discount.
Blacksmith's ..... 50&10@60
Moulders, ..... discount 50@50 & 5
Hand, ..... discount 50@50 & 5

### Belting, Rubber.

Standard ..... dis 70&5@70&10
Extra ..... dis 60@60&10
N. Y. Belting & Packing Co. standard.. dis 60&10
N. Y. Belting & P'king extra standard dis 50&10
Cleveland Rubber Co., extra standard...dis 60&10
Extra 5 dis on all for Cash.
Shultz Raw Hide Leather Belting, single, dis 30
" " " " double, dis 35
Standard, oak tanned, ..... dis 50
Lower grades ..... 50&10 to 60

### Bench Stops.

Hotchkiss's ₩ doz $5.00 ..... dis 10@10&10
Weston's ₩ doz No. 1, $10.00; No. 2, $9 ..... dis 25&10&5
McGill's ..... ₩ doz $3.00 dis 10
Merrill's ..... ₩ doz $9.00 dis 50

### Bit Holders.

Extension, Barber's ..... ₩ doz $15 00, dis 40&5
Diagonal ..... ₩ doz $24.00 dis 40
Angular ..... ₩ doz $24 00, dis 40&5

### Blind Adjusters.

Domestic ..... ₩ doz $3.00 dis 33⅓
Excelsior ..... ₩ doz $10.00 dis 50 and 10 and 2

### Blind Staples.

Barbed ¼ inch and larger ..... ₩ lb 8@8½c net
Barbed ⅜ inch ..... ₩ lb 9@9½c net

### Bolts.

Cast iron barrel bolts ..... } 70 to 70&5
Cast Iron shutter bolts, etc ..... } 70 to 70&5
Cast iron chain bolts ..... } .....65&10
Iron patent door bolts ..... } 55
Wr't iron barrel bolts ..... } 70 to 70&5
Wrought iron square bolts ..... } 70 to 70&5
Wrought shutter bolts ..... } 60&10
Sargent's list
Carriage com. new list ..... 75&12½&2
Tire, common, new list ..... 65&10
Carriage and tire, Philadelphia pattern 75&10@75 [&10&5
Stove bolts ..... 70
Plow bolts ..... 65
Machine ..... 75&10@75&15
Bolt Ends ..... dis 75&10to75&15

### Blind Fasteners.

Mackrell's ..... ₩ doz. pairs, $1.00—dis 20@20&10
Van Sand's Screw Pattern $15 ₩ gross—dis 60&10
Van Sand's Old Pattern..... $15 ₩ gross—dis 55&10
Washburn's Old Pattern ..... $9.00 ₩ gross, net
Merriman's ..... new list, net
Salisbury & Austin No. 2008 ..... $9.00 ₩ gross, net
Security Gravity ..... $9.00 ₩ gross, net

### Borax.

₩ lb ..... 8½c@8¾c

### Boring Machines.

| Without augers. | Upright | Angular |
|---|---|---|
| Douglas | 5 50 | 6 75 dis 50 |
| Snell's, Rice's patent | 5 50 | 6 75 dis 40&10&10 |
| Jennings | 5 50 | 6 75 dis 45@45&10 |
| Other machines | 2 35 | 2 75 ..... net |
| Phillips, with augers | 7 00 | 7 50 ..... net |

### Bow Pins.

Humason, Beckley & Co.'s, Nos. 1 and 2 dis 60 and 10@60 and 10 and 5
Humason, Beckley & Co.'s other Nos. dis 70@70 and 10
Sargent & Co.'s ..... $17 and $18, dis 60 and 10
Peck, Stow & W. Co dis 50 and 10@50 and 10 and 5

### Braces.

Q. S. Backus ..... discount 60&5@60&10
Barber's ..... discount 50
Spoffard's Patent ..... discount 50&10
Common Ball, American..... 8½ in $1.30-10 in $1.50
Bartholomew's Nos. 25, 27, 30 dis 50&10@50&10&10
Bartholomew's Nos. 117, 118, 119 ..... dis 65@65&5
Amidon's Barker's imp'd ..... dis 60 t 10&5
Amidon's corner brace ..... dis 40@40&10
Universal ..... 8 inch $1.90; 10 inch $2.10
Buffalo Ball ..... 8 inch $1.10@$1. 15

### Brackets.

Shelf, plain, Sargent's list ..... 55&10@55&10&10
Fancy " " ..... dis 60&10@60&10&10
Reading, plain ..... dis 60&10@60&10&10
Reading, rosette ..... dis 65&10@65&10&10

### Bright Wire Goods.

Regular List ..... 75&10

### Broilers.—Henis' self basting.

| Inch | 9 | 10 | 9x11 |
|---|---|---|---|
| Per doz | $4 50 | 5 50 | 6 50 |

### Buckets, Galvanized.

Hill's ₩ doz ..... 12qt 3 50 ..... 14qt 4 50
Iron clad 14 qt $8 ..... dis 00

### Bull Rings.

Union Nut Co. ..... dis 55
Sargent's ..... dis 66⅔&10
Hotchkiss' low list ..... dis 30
Humason, Beckley & Co.'s ..... dis 70&10
Peck, Stow & W. Co.'s ..... dis 50&10
Ellrich Hardware Co., white metal low list dis 50

### Butts.

Discount
Wrought brass ..... 80@80&10
Cast brass, loose joint ..... 33⅓&10to33⅓&10&10
Cast Iron—
Fast joint, narrow ..... 60&5@60&10&5
Fast joint, broad ..... 60&5 to 60&10&5
Loose joint ..... 70&10@70&10&5
Loose joint, jap ..... 70&10@70&10&5
Loose joint, jap. with acorns ..... 70&10@70&10&5
Loose pin, acorns ..... 70&10@70&10&5
Loose pin. japanned acorns ..... 70&10@70&10&5
Loose pin. acorns, japanned, plated tips 70&10@70&
Wrought iron— 10&5
Wrought, fast joint narrow ..... 65&2
Wrought, fast joint broad ..... 65&2
Wro't loose joint broad ..... 65&5&2
Table Butts. back flaps, etc. ..... 65&2
Regular inside blind ..... 65&2
Light inside blind ..... 65&2
Loose pin ..... 65&5&2
Light loose pin ..... dis 65&2
Gem spring hinges ..... 20
Blind butts, Parker ..... dis 75&2
Blind butts, Palmer ..... dis 50&5&10
Blind butts, Seymour ..... dis 70&2
Blind butts, Lull & Porter ..... dis 80
Blind butts, Nicholson ..... dis 45&10
Blind butts, Huffer ..... dis 50
Blind butts. Clark's Nos. 1, 3, 5 ...dis 80&5@80&10
Blind butts, Manhattan Hardware Co..... dis
Blind butts, Sargent Nos. 1, 3 ..... dis 75&10
Blind butts, Sargent's No. 12 ..... dis 75&10&10
Blind butts, Reading's Gravity ..... dis 75&10
Blind butts, Shepard's "Noiseless" Nos. 50 60, 65, 45, 55 ..... dis 75&10@75&10&5
Blind butts, Shepard's Champion Gravity, No 75 ..... dis 80&10
Blind butts, Shepard's "Gravity," Nos. 1, 3 and 5 ..... dis 80
North's automatic blind fixtures, No. 2 for wood, $10 50; No. 3 for brick, $13 00 dis 25&2
Shepard's "O.S" and "Acme," Lull & Porter ..... dis 75&10&5
Shepard's "Queen City" reversible ..... dis 75&10
Clark's imp'd shutter hinge, Nos. 0, 1, 1½, 2, 2½, 3 ..... dis 70@70&5

### Butcher's Cleavers.

Humason & Beckley Mfg. Co..... dis 30&5@30&10
Bradley's ..... dis 25@30
Beatty's ..... dis 33⅓&5

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| $16 50 | 19 00 | 21 50 | 24 00 | 27 00 | 30 00 | 33 50 | 36 50 |

New Haven Edge Tool Co.'s ..... dis 40
Albertson Mfg. Co. ..... dis 33⅓@33⅓&5

### Can Openers.

Sprague No. 1 $2.00, 2 $2.25, 3 $2.50. dis 50&10&10
Universal ..... ₩ doz $3 00, dis 35&5
Domestic ..... ₩ doz $2 50, dis 45
Champion ..... ₩ doz $2 00, dis 50

### Caps—Percussion, ₩ 1000.

Hicks & Goldmark's } dis. 25
F. L. Waterproof, 1-10's ..... 50c
E. B. Trimmed Edge, 1-10's ..... 65c
E. B. Ground Edge, Cent. Fire, 1-10's 70c
Double Waterproof, 1-10's ..... 1.40
Musket Waterproof, 1-10's ..... 54c
G. D. ..... 28
Elys waterproof central fire ..... $1.60

### Cartridges.

Rim fire ..... discount 60&2
Pistol and rifle ..... discount 40&2
Military and sporting ..... discount 30&2

### Carpet Stretchers.

Cast steel, polished ..... ₩ doz $3.25
Cast iron, steel points ..... per doz 80c
Sockets ..... ₩ doz $1 75
Bullard's ..... dis 25@25&10

### Cattle Leaders.

Humason, Beckley & Co.'s ..... dis 75
Sargent's ..... dis 66⅔&10
Hotchkiss ..... dis 30
Peck, Stow & W. Co. ..... dis 50&10

### Carpet Sweepers.

Queen ..... ₩ doz $16.00
Mystic ..... ₩ doz $17
Cottage ..... ₩ doz $15
Queen, with band ..... ₩ doz $18
King ..... ₩ doz $30
Garland ..... ₩ doz $19

### Cards.

Horse and Curry ..... dis 10@10&10
Cotton ..... new list, Aug., 1883, dis 10
Wool ..... new list, Aug., 1883, dis 10

### Casters.

Bed } dis 50&10@50&10&5
Plate }
Shallow Socket }
Deep Socket ..... dis 45&10
Yale Casters, list May, 1884, ...dis 25&10@25&10&5
Martin's patent ..... dis 45&10 to 50
Payson's Anti-friction ..... dis 60

### Chains.

Trace, 6½-10-2 ..... ₩ pair 79c } dis 50&10@60
Trace, 6½-10-3 ..... ₩ pair 70c }
Trace, 7-10-2 ..... ₩ pair 86c }
German Halter Chain, list June, 1884, dis 55&5@60
German Coil, list of June, 1881 ..... dis 55&5@60
Galvanized Pump Chain ..... ₩ lb 5¼ to 6c
Galvanized Tea-Kettles

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 50 | 60 | 60 | 75 |

### Chalk.

White ..... ₩ gross 55c
White Crayon ..... ₩ gross 12@12½

### Chisels.

Socket Framing and Firmer ..... dis 75@ 75& 5
Socket Framing and Firmer, Buck, Bros..... dis 30
Socket Firmer & Framing, L. & I. J. White ..... dis 30@30 & 5
Tanged Firmers ..... dis 50 to 50&5

### Clamps.

Snow's adjustable, iron ..... dis 40&5
Hammer's adjustable, iron ..... dis 15
Sargent's cabinet, iron ..... dis 66⅔&10

### Clips.

Axle and spring bar, Norway iron ..... dis 65&2
Wrought-Iron felloe clips ..... ₩ lb. 5½c
Steel felloe clips ..... ₩ lb. 5c

### Cockeyes.

discount ..... 50

### Coal Vases.

Buffalo Palace, S. S. & Co ..... dis 33⅓&10&10
Buffalo Common, S. S. & Co..... dis 33⅓&10&10

### Cocks, Brass.

Racking ..... dis 65&10@70
Globe ..... dis 65&10@70
Plain Bibbs ..... dis 60&10@60&10&5
Ale and Beer ..... dis 60&10@60&10&5

### Coffee Mills.

Enterprise ..... 20 & 10@30

### Compasses, Dividers, &c.

Compasses ..... dis 70@70&10
Calipers ..... dis 70@70&10
Dividers ..... dis 70@70&10
Bemis & Call Co.'s Dividers ..... dis 60&5
Bemis & Call Co.'s Compasses & Calipers..dis 50&5
Bemis & Call Co.'s Wing & Inside or Outside ..... dis 50&5
Bemis & Call Co.'s Double ..... dis 60
Bemis & Call Co.'s (Call's Patent Inside)..... dis 30
Excelsior ..... dis 20@30&5
Cook's Extension ..... dis 20@20 &5
J. Stevens & Co.'s Calipers and Dividers ..... dis 25&10

### Coopers' Tools.

Bradley's ..... discount 20
Barton's ..... discount 20 to 20&5
L. & I. J. White ..... 20 & 5

### Corkscrews.

Humason, Beckley Mfg. Co..... dis 40@40&10
Clough's patent ..... dis 33⅓@33⅓&5
Howe Bros. & Hulbert ..... dis 35

### Corn Knives.

Corn knives, Bradleys ..... dis 10

### Cradles.

Grain ..... dis 40&5&2

### Crowbars.

Cast steel ..... ₩ lb 3¾
Iron, steel points ..... 3¼@3½

### Curry Combs.

Fitch's ..... dis 50&10@50&20
Rubber ..... ₩ doz. $10.00, dis 25@30

### Curtain Pins.

Silvered glass ..... net
White enamel ..... net

### Cutlery.

Beaver Falls ..... dis 33⅓
Goodell table ..... dis 35@ 40

### Dog Collars.

Embossed gilt ..... dis 30&10
Leather ..... dis 40

### Door Springs.

Torrey's Rod, regular size ..... ₩ doz $1.30
Gem (Coil): list April 19, 1885 ..... dis 10
No. 1, Large Japanned ..... ₩ doz. $4.00 } dis 50&10
No. 2, Medium Japanned ..... ₩ doz 2.75 }
No. 3, Small Japanned ..... ₩ doz 2.00 }
Japanned and coppered ..... dis 60
Galvanized and nickel plated ..... dis 50
No. 4, Screen Door size ..... ₩ doz. 1.50 } dis 40
No. 5, Screen Door size, ..... ₩ doz. 2.00 }
No. 6, Medium ..... ₩ doz. 2.75 }
No. 7, Large ..... ₩ doz. 4.00 }

### Drawing Knives.

Douglass & Witherby ..... dis 75@75&5
Merrill ..... dis 60&10&10
L. & I. J. White ..... dis 20 & 5
Adjustable handle ..... dis 20 to 25

### Drills and Drill Stocks.

Blacksmiths' each ..... 1.50@1.60
Blacksmiths' self-feeding, each ...$7.50 discount 20
Breast, P. S. & W ..... discount 40 & 10
Breast, Millers Falls ..... each, $3.00 discount 25
Ratchet, Weston's ..... 20@25
Automatic Boring Tools ..... each, $1.75 to $1.85
Twist drills, straight and taper shank 1¼ inch and longer ..... 50&10

### Drill Chucks.

Morse's Beach Patent ..... each, $8.00, discount 20
Morse's Adjustable ..... each, $7.00, dis 20 to 20&5

### Dripping Pans.

Buffalo, S. S. & Co. ..... ₩ lb. 5¼@5½c

### Egg Beaters.

Dover ..... per doz. $2.50
Acme ..... per gross $7.00

### Emery.

Regular numbers ..... ₩ lb 4@7c
Flour and F. F ..... ₩ lb 2¼@5c
For emery paper and cloth, see sand paper.

### Escutcheon Pins.

Iron, List Nov. 11, 1885 ..... dis 50&10@50&10&5
Brass ..... 50&10@50&10&5

### Escutcheons.

Door Lock ..... Same discounts as Door Locks
Brass Thread ..... dis 60 to 60&10
Wood ..... dis 25

### Faucets.

Frary's Patent Petroleum ..... dis 40 &10&2
Cork Lined ..... dis 70 to 70&10
Self-measuring, Enterprise, per doz $36 dis 20&10

### Fly Traps.

Paragon ..... ₩ doz $2 00

### Files.

J. & Riley Carr, new list April 1, 1883, ..... dis 15
J. & Riley Carr horse rasps ..... dis 10
Best files of domestic make, according to brand ..... dis 60&5@60&10
Lower grade domestic files ..... dis 70@70&5
Heller's horse shoe rasp ..... dis 50&1

### Forks

Hay, Manure and Spading, list ..... dis 60&10&10
Phila list ..... 60@60&5

### Fruit and Jelly Presses.

Enterprise Mfg. Co. ..... dis 20&10@33⅓

### Fry Pans.

Central Stamping Co.'s list ..... dis 40&5@—

| No | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| ₩ doz. | $1 50 | 1 75 | 2 00 | 2 25 | 2 50 | 2 75 | 3 25 | 3 75 | 4 25 |

S. S. & Co. ..... dis 40&2
"Acme" ..... dis 60

### Fluting Scissors.

Discount ..... 45

### Fluting Machines.

Eagle 3½-inch ..... $2.15, dis 35
Geneva Hand Fluter. White Metal. ₩ doz. 12.00 ..... dis 25
Shepard hand, Nos. 85 $15.30, 95 $6, 110 $11 dis 40
Knox, 4½ inch rolls ..... $3 25 each } dis 35
Knox, 6 inch rolls ..... $3 60 each }
Crown, 4½ in. $3 50; 6-in. $4 00; 8-in. $6 50 each ..... dis 35
Crown Jewel ..... 6-in. $3 50 each, dis 35
American, 5-in. $3; 6-in. $3 40; 7-in. $4 50 each ..... dis 35
Crown hand fluter, Nos, 1 $15; 2, $12 50; 3, $10 ₩ doz ..... dis 30

### Gauges.

Marking ..... dis 60&10
Wire ..... dis 10&10
Wire, Wheeler, Madden & Co. ..... dis 10

### Gimlets.

Nail and Spike ..... dis 50&10 &
"Eureka" Gimlets ..... dis 40&10
"Diamond" Gimlets ..... dis 40&10
Double Cut, Shepardson's ..... dis 45
Double Cut, Ives' ..... dis 50&10@60
Double Cut, Douglass' ..... dis 40
"Bee" ..... ₩ gross $12. dis 25

### Glue Pots.

Tin enameled ..... dis 35@35&5
Family, Howe's ..... dis 40

### Grindstone Fixtures.

Sargent's ..... dis 70&10

### Gun Wads.

U. M. C. & W. R. A.—B. E., 11up ...2 00 } dis 20&2
U. M. C. & W. R. A.—B. E., 9&10 ... 2 30
U. M. C. & W. R. A.—B. E., 7&8 .... 2 60
U. M. C. & W. R. A.—P. E., 11up ... 3 10
U. M. C. & W. R. A.—P. E., 9&10 ... 4 00
U. M. C. & W. R. A.—P. E., 7&8 .... 4 90
Eley's B. E., 11 up ..... 1 75
Eley's P. E., 11@20 ..... 2 50

### Hack Saws.

Griffin's Hack Saws, complete ..... dis 40&10@50
Griffin's Hack Saw, Blades only ..... dis 40&10@50
Star Hack Saws and Blades ..... dis 25

### Halters.

Covert's patent ½ jute ..... dis 50&10&2
Covert's hemp horse and cattle ties... dis 50&10&2
Covert's jute horse and cattle ties ..... dis 60&2
Meneely's pat adjustable hemp and jute..dis 50&10
Meneely's hemp and jute horse and cattle ties ..... dis 50&10

### Hammers.

Maydole's ..... discount 25@25&10
Cheney's new list, Dec 1, 1885 ..... dis 20&10
Buffalo Hammer Co ..... dis 30@35
Magnetic Tack, No. 1, 2, 3, $1.25, $1.50 and $1.75, dis 30&10
Heavy hammers and sledges.. dis 60&10@60&10&5

### Hand Cuffs and Leg Irons.

Providence Tool Co., hand cuffs, $15 ₩ doz...dis 10
Providence Tool Co., leg irons $25 ₩ doz ..... dis 10
Tower's ..... dis 25
Daley's improved hand cuffs; 2 hands, polished, ₩ doz. $48; Nickeled, $57; 3 hands polished, ₩ doz $72; Nickeled, $84 ..... dis 20

### Handles—

Door or Thumb Latches.

| Per doz | Nos. 0 | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|---|
| Sargent's | .90 | 1 00 | 1 18 | 1 35 | 1 50 | dis 60&10 & 10 |

Roggin's Latches ..... ₩ doz. 80@35c
Bronze Iron Drop Latches ..... ₩ doz. 70c net
Jap'd store door handles—Nuts, $1 62; Plate $1 10; no plate $0 88 ..... net
Barn door ..... ₩ doz $1 40, dis 10&10
Wrought chest ..... dis 70
Surface chest ..... dis 70
Flush chest ..... dis 70
Lifting ..... dis 70
Saw and plane ..... dis 40&10@40&10&5
Hammer and hatchet ..... dis 30@30&10
Brad awl ..... ₩ gross $2 00
Hickory firmer chisel, assort ..... ₩ gross $4 50 } dis 40
Hickory firmer chisel, large ..... ₩ gross $5 00
Apple firmer chisel, assorted ..... ₩ gross $5 00
Apple firmer chisel, large ..... ₩ gross $6 00
Socket firmer chisel, assorted ..... ₩ gross $3 00
Socket framing chisel, assort ..... ₩ gross $5 00
File, assorted ..... ₩ gross $2 75 } dis 40
Auger, assorted ..... ₩ gross $5 00 } @40&10
Auger, large ..... ₩ gross $7 00 }

### Hangers.

Barn Door, old patterns ..... dis 60&10 &10@70
Barn Door, New England ..... dis 60&10&10@70
Climax (Anti-Friction) ..... dis 50
Zenith Anti-Friction Wood Track ..... dis 55
Reed's Steel Arm ..... dis 40
Challenge ..... dis 50
"Champion" Medina Mfg. Co. ..... dis 40
Sterling Improved (Anti-friction) ..... dis 65&10
Victor, No. 1, $15; No. 2, $16.50; No. 3, $18.. dis 50&2
Cherritree ..... dis 50 & 5
Kidder's ..... dis 50&10@50&10
U. S., wood track ..... dis 65
The "Boss" ..... dis 60
Terry's Patent 5 in., 12.00; 3½ in., 10.00, dis 40&5 @40&10
Cronk No. 4, 12.00; No. 5, 14.40; No. 6, 18.00, ..... dis 50&5@50&10
Architect ..... ₩ set 6.00, dis 20
Eclipse ..... dis 20&14
Felix ..... ₩ set 4.50, dis 20
Hamilton Wrought ..... dis 55

### Harness Snaps

German, old list ..... dis 75
Meneely's Pat. Safety new list ..... dis 60&10
Covert, New Patent, new list ..... dis 60&5

### Hollow-Ware.

Stove Hollow-Ware, Ground dis 60&10@50&10&5
Enameled and Tinned Hollow-Ware
Kettles ..... dis 50&10
Oval Boilers, Saucepans ..... dis 50@35
Gray Enameled Ware ..... dis 60@40&5
Rustless Hollow-Ware ..... dis 50@50&5
Jack Chain, Iron ..... 75@75&10
Jack Chain, Brass ..... 75@75&10

## For Sale Cheap.

A NEW PONY PLANER, planes from ⅛" to 6" thick and 24" wide. A strong and durable machine; address for further particulars, X X, care Iron Trade Review, Cleveland, Ohio. 52tf

## For Sale, Cheap.

A FOUR HORSE POWER PORTABLE ENGINE, horizontal, with return flue boiler. Warranted in good condition. Any one desiring a good engine at less than half price should correspond with us. Photograph of engine sent on application. Address Wyoming County Times, Warsaw. 52

## For Sale.

1 Biehle Bros. Patent Furnace Charging Scale.
1 Fairbanks Furnace Charging Scale.
1 Duplex Worthington Steam Pump, 10x12x6.
1 No. 3 Knowles' Steam Pump.
All in good order. WM. FITZSIMONS,
83-4t 626 Broadway, Cleveland, Ohio.

## For Sale.

ABOUT 125 MAGIC SCREW PLATES, new and first class, at less than cost to maker. Included are Screw Plates, cutting bolts from ¼" to ¾"; also ¼" to 1" with Plug Taps, and Pipe Cutting-off and Threading Stocks, several sizes, from ⅛" to 4" pipe.

$2000.00 worth extra quality Files, bought at old prices.

$2000.00 worth wood Split Pulleys, which will pay for themselves in one season over any other pulley.

Lot of iron Pulleys, at half their cost.

5000 lbs. 5-16", ⅜" and ½" square and hexagon Nuts, at 3 to 5 cents per lb.

Lathes, Planers, Drill Presses and Machinery. Prices low. S. M. York.
42 South Water St., 81 CLEVELAND, O.

## For Sale.
## Second Hand Machinery.

1 Band log saw mill, (London, Berry & Orton's make.)
1 Iron planer, 22x22 in., 5 feet bed.
1 Pipe cutter.
1 Drill.
1 Gang drill (10 spindles.)
1 Sand preparing machine.
1 18x20 in. vertical engine.
2 pairs vertical hoisting engines, 6x10 in.
1 8x9 in. vertical hoisting.
1 12 in. Cameron steam pump.
5 small steam pumps.

Large lot of engines and boilers, all sizes and styles, and miscellaneous machinery for sale cheap. The Harms Machine Depot.
32-3m 92 & 94 1st Ave., PITTSBURG.

## SECOND-HAND MACHINERY
## For Sale.

1 Fay & Co. Little Giant 4-roll single cylinder Planer and Matcher.
1 Fay & Co. Little Giant 4-roll double cylinder Planer and Matcher.
1 Tompkins 6-roll 24-inch double cylinder Planer and Matcher.
1 Ball 24-inch single cylinder Planer and Matcher.
1 Fay & Co. endless bed, single surface Planer, 24 inches wide, 8 inches thick.
1 Fay & Co. endless bed, single surface Planer, 26 inches wide, 6 inches thick.
1 20-inch Pony Planer, made by Frank & Co.
2 Panel Raisers.
1 Ball wood frame Sash machine.
1 self-feed Blind Slat Tenoner.
1 Goodspeed & Wyman Gauge Lathe.
1 Rogers' Axe-handle Lathe.
1 Union Siding machine. This machine planes both sides, joints both edges, and Resaws at one operation.
1 Stave Cutter.
1 Bolt Equalizer.
Lot Second-hand Stave Machinery.
1 24-in. Cigar Box Planer } For making
1 Paper Cutter, } Cigar Boxes.
1 Hand Stamping Machine, }
1 10 x 18 Stationary Engine.
1 30-H.P. Portable Boiler.
James Jenks & Co.,
48 to 54 Randolph Street,
DETROIT.

## For Sale.

1 30-H. P. Engine.
1 60-H. P. Engine.
1 4-H. P. Engine and Boiler.
1 2-H. P. Engine and Boiler.
1 Good Earl Steam Pump.
1 24x24x6 ft. Planer; good as new.
1 20x20x4½ ft. Planer.
1 No. 0 Sturtevant Fan; good as new.
2 Oatmeal Machines and Patent.
63 PECK & DEMPSEY, Akron, O.

## For Sale.

THE New York, Pennsylvania & Ohio Railroad Company has the following property for sale: 13 broad-gauge Locomotive Boilers, at Meadville, Pa., and Galion, O., and a narrow-gauge three ft. Locomotive. Also the iron for a Nutter car hoist, for exchanging cars from one gauge to another. For particulars address
CHARLES LATIMER,
Engineer of Company, Cleveland, O.
Oct. 1, 1886. 04-4t

## For Sale—Boilers.

ONE 10 H. P. return Tubular Boiler—new.
One 12 H. P. return Tubular Boiler—new.
One 75 H. P. return Tubular Boiler, Otis Steel—new.
One 25 H. P. return 40x10 Tubular—2nd hand.
One 35 H. P. return 44x13 Tubular— "
One 42 H. P. return 48x13'-6 Tubular— "
One 18 H. P. Loco.-Fire box Boiler— "
One 12 H. P. Loco.-Fire box Boiler— "
One 60 H. P. second hand Engine—in working order.

All in good condition. Can be seen and examined at our Works. Prices reasonable.
THE VARIETY IRON WORKS CO.,
14-4t 51 to 89 Scranton Ave., Cleveland, O.

## Wanted.

6 TONS 12 or 15 lb. iron or steel T-rails, new or second hand. Address at once, stating price. BRADDOCK & FARNHAM.
33 Richfield, O.

# Patents.
## H. T. FISHER,
### SOLICITOR AND COUNSELOR,

Late Examiner U. S. Patent Office. Eight years experience in Examining Corps. Prices moderate. Satisfaction guaranteed. Write or call for particulars. [05]
34 Blackstone Building, CLEVELAND, O.

## Desirable Machinery
## For Sale.

50 inch swing, 30 foot bed Screw Cutting Lathe—second hand.
36 inch swing, 16 foot bed Screw Cutting Lathe, —second hand—Fitchburg.
28 inch swing, 16 foot bed Screw Cutting Lathe, —second hand—Fifield.
24 inch swing, 24 foot bed Screw Cutting Lathe, —second hand—Fifield.
20 inch swing, 14 foot bed Screw Cutting Lathe, —new—Star.
20 inch swing, 8 foot bed Screw Cutting Lathe, —new—Perkins.
18 inch swing, 10 foot bed Screw Cutting Lathe, —second hand—Star.
16 inch swing, 6 foot bed Screw Cutting Lathe, —second hand—Putnam.
14 inch swing, 6 foot bed Screw Cutting Lathe, —second hand—Fitchburg.
10 inch swing, 4 foot bed Screw Cutting Lathe, foot power—new—Young.
58 inch x 46 inch x 18 foot Planer—second hand.
24 inch x 24 inch x 4½ foot Planer—second hand.
22 inch x 22 inch x 5 foot Planer—second hand, —Ames.
20 inch x 20 inch x 5 foot Planer—second hand, —Hendey.
18 inch x 18 inch x 4 foot Planer—second hand, —Fitchburg.
6 foot Pond Boring and Turning Mill,—old pattern—second hand.
Niles Radial Drill—second hand.
44 inch swing back geared Drill—second hand—$200.00.
28 inch swing self feed Drill—new—$200.00.
20 inch swing lever Drill—new—$65.00.
18 inch swing lever Drill—second hand.
600 lbs. Bement Steam Hammer—second hand.
10 ton Travelling Crane, hand power—second-hand.
1 Lewis Bolt Header, heads to 1¾ inches—second hand.
1 National Bolt Header, heads to 1 inch—second hand.
1 Chapin Bolt Header, heads 1½ inches—second hand.
1 National Double Head Bolt Cutter, in fine order—second hand.
2 National Bolt Cutters, sizes 1 and 2; all improvements—new.
3 Rapid Bolt Cutters, cut to ⅝ and 1 inch; good order—second hand.
3 Rapid Nut Tappers, 4, 5 and 6 spindles. Tap ⅝, ¾ and ⅞.
1 15 inch Steptoe Shaper—second hand.
1 50 inch Ames' Pulley Lathe—second hand—$150.00.
1 25 inch Stevens' Pulley Lathe, 2 tools and boring attachment—new.
1 50 inch Stevens' Pulley Lathe, 2 tools and boring attachment—new.
1 Diamond single wheel water Tool Grinder—new.
1 Diamond two wheel water Tool Grinder—new.
1 Diamond Universal Grinder, for shafts, cutters, etc.—new.
Full line Huntington Suspended Grinders, on which wheels wear true, grind faster, and without any jar. Send for Circular.
1 25 H. P. Westinghouse Engine—new, and very cheap.
1 15 H. P. Nagle Horizontal Engine and Upright Boiler, used 6 weeks, complete, and good as new.
1 8 H. P. Upright Boiler and Engine—Bookwalter—cheap.
1 25 H. P. Horizontal Engine.

Parties wanting good machinery of any kind, new or second hand, will find it to their interest to address W. H. Robertson,
48 South Canal Street, [34] CHICAGO.

## For Sale.

WOODBURY & BEACH AUTOMATIC ENGINE, 24x48. Two Tubular Boilers 300 horse power. 60-horse Engine and Tubular Boiler, $650. 75-horse Marine Upright Engine, $600. CLARK CENTER,
93-9ms SANDUSKY, OHIO.

## For Sale.

FACTORY.—Nearly new.—On two Railroads acre of buildings; cost $33,000; take $23,000 part real estate; large engines, boilers, shafting etc.; will put capital in some good manufactory McCONNELL'S BUSINESS EXCHANGE,
208 Superior street, 09 Cleveland, O.

## Wanted.

AN old established firm, factors of Oils, Colours, and other articles used by Engineers, and Builders, with every facility for conducting a large business, are desirous of obtaining good Foreign Agencies; superior references. "R. M." care of Brown, Gould & Co., 52 New Oxford St., London, England.

## Wanted.

1 Lathe, 18" swing, 7 ft. bed (turret head).
1 Lathe, 12" swing, 5 ft. bed.
1 Planer, 36x36x10 ft.
1 Planer, 30x30x8 ft.
1 heavy iron plate Shear.
1 35-H.P. Engine.
1 40-H.P. Boiler. (tubular).
New and second hand machinery wanted.
BIDS will be received for furnishing the above tools, &c. Give full particulars and description with prices, delivered in Cleveland.
Address F. M. & Co., care Iron Trade Review, Cleveland, O. 62

## Beaver Falls Steel Works.
BEAVER FALLS, PA.

Manufacturers of all kinds of STEEL. Special "Beaver" Tool, Die, and Axe Steel, Iron Center, Soft Steel Center, and Cast Plow Steels. Open Hearth Bessemer Agricultural Steel Shapes.
Finished Rolling Coulters and Patent Cutlery Steel.

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IN THE
## MACHINE SHOP.

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THE STANDING SEAM allows of an easy and secure fastening, keeping the pipe far enough from the wall to make any overflow from the eave pipe or head, run down the spout, and not the wall; and will open, in case of freezing, so as to prevent bursting, and still remain double-locked and water-tight.

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R. [illegible] Fifth St., Cincinnati, O

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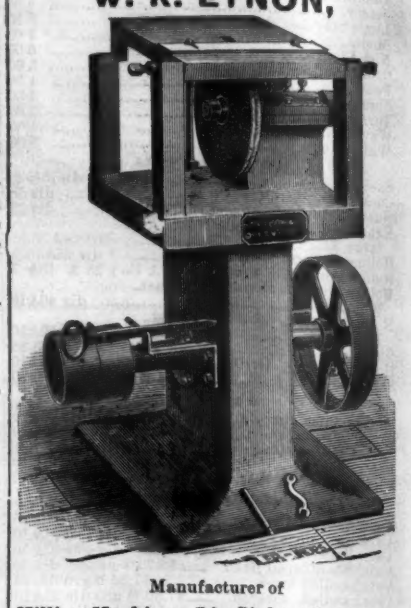

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## WATER CUT-OFF
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It is the only Cut-Off that can be used in any position without extra pipe.
Try them and you will use no other.
For sale by the trade. Ask your jobber for them
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3 inch sample by mail 50 cents in stamps. The following houses are special agents, who will furnish this Cut-Off at manufacturer's prices: G. H. Moseman & Co., New York City; F. H. Lawson & Co., Cincinnati, Ohio; Haslet, Flanagen & Co., Philadelphia, Pa., L. F. Hoffman, San Antonio, Tex.; Troy Stamping Works, Troy, N. Y. 04ly

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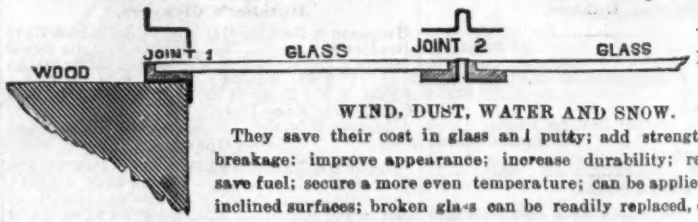


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They save their cost in glass and putty; add strength and prevent breakage; improve appearance; increase durability; retain heat and save fuel; secure a more even temperature; can be applied to vertical or inclined surfaces; broken glass can be readily replaced, etc.

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INDESTRUCTIBLE. FIRE-PROOF. SOUND-PROOF. FROST-PROOF. VERMIN-PROOF. ODORLESS.

For Deadening, Fire-Proofing, Insulation of Heat and Cold in Buildings, Prevention of Frost in Water or Gas Pipes.

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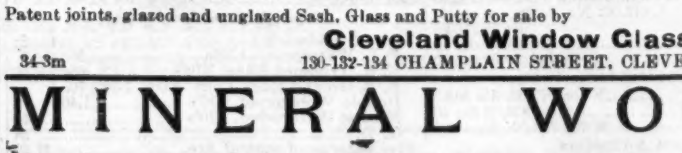

Also Fire-Proof Sections Coverings for Steam Pipes and Boilers. Best non-conductor for all surfaces, Steam or Fire Heat. Will not Char, Crack, or Burn. Easily applied and removed by any one, and is endorsed by Insurance Companies. For full information and sample free address
**Western Mineral Wool Co.,** Box 123, **Cleveland, O.** [73]

### Hay Knives.

Lightning.....per doz. $18 dis 20
Electric.....℔ doz $9.50@10.50

### Hinges.

Wrought Strap and T Hinges..... 65&5&2
Screw, hook and strap, 8 10 12 in.....3½@3¾
14 to 36 in..... 2½@2¾
Screw hook & eye hinges...½ ℔ doz 1.50 } ...dis 10
⅝ 2.45 }
¾ 3.80 }
Gate, western.....℔ doz $4 40, dis 55
Gate, N. E. .....℔ doz $7 00, dis 55
Gate, N. E. reversible.....℔ doz $5 20, dis 55
Gate, Clark's. Nos. 1, 2, 3.....dis 60&10&2
Gate, N. Y. State .....℔ doz $5 00, dis 55
Gate, automatic .....℔ doz $12 50, dis 50
Gate, common sense.....℔ dos pair $4 50, dis 50
Gate, Seymour's .....dis 45&10
Am. Spring Hinge Co..... 30

### Hoes.

Garden, mortar,.....dis 60&10&10
Planter's, cot,.....dis 60&10&10
Magic.....℔ doz $4.75
Grub.....dis 60@60&10

### Hog Rings and Ringers.

Perfect rings.....℔ doz boxes $1.75@$2
Perfect ringers.....℔ doz $2.50
Blair hog ringers.....℔ doz $2.60

### Hoisting Apparatus.

"Moore's" hand hoist, with lock brake .....dis 15
"Moore's differential pulley block.....dis 20

### Hooks.

Bird Cage, Sargent's list.....dis 60&10&10
Bolt..... dis 80@80& 5
Clothes Line Sargent's list.....di 66&10
Ceiling Sargent's list..... dis 55&10
Coat and Hat. Sargent's list .....dis 55&10
Wire Coat and Hat. Gem.....dis 45
Wrought Staples and Hooks & Staples.....dis80&10@80&20
Wire Screw Hooks and Screw Eyes. dis 75&10
Hooks and Eyes—Malleable Iron..... dis 70
Hooks and Eyes—Brass.....dis 60&10&10

### Horse Nails.

| | No. 10 | 9 | 8 | 7 | 6 | 5 | |
|---|---|---|---|---|---|---|---|
| Ausable, ℔ lb..... | 23 | 24 | 25 | 26 | 28 | 31 | dis25&10 |
| Putnam, ℔ lb..... | 19 | 20 | 21 | 22 | 24 | 27 | dis 5 & 7 |

### Horse Shoes.

Burden at factory.....℔ keg $3.75
R. I. Horse Shoe Co., Perkins' Imp. at factory.....℔ keg $3 75
Walker's forged .....℔ keg $3 75
Mule Shoes, at factory.....℔ keg $4,75

### Hose, Rubber.

dis..... 75&10@75&10&5
N. Y. Belting & Packing Co. standard dis 60@60&10

### Ice Awls, Chisels, &c.

American Ice Chisel Pol'd.....℔ doz. $3.00, dis 20

### Ice Cream Freezers.

Buffalo champion, S. S. & Co.....dis 60&2@60&5

### Ice Tongs.

Champion .....℔ doz $4.00, dis 25&10
Family.....℔ doz $2.75, dis 20@25

### Jack Screws.

Millers Falls list.....dis 50

### Kettles.

Brass, 7 to 17 inches inclusive.....℔ lb 22c. net.
Brass larger than 17 inches.....℔ lb 24c. net.
Enameled and Tea Kettles.....See Hollow Ware

### Keys.

Eagle, cabinet, trunk and padlock.....dis 40 and 2

### Knives.

Ames' Butcher.....dis 25
Ames' Shoe Knives..... dis 20@25

### Knobs.

Carriage, Japanned.....℔ gross 80c. dis 60&10
Base, Rubber Tip.....dis 70&10&5
Remetite Door Knobs, new list....dis 35&5@35&10
Door Mineral..... 65@68c
Door porcelain japanned..... 75@80c
Door porcelain plated..... $2.50@2.75
Door porcelain..... 2 75@3 00
Shutter, Porcelain.....dis 65&10

### Ladles.

Melting, Sargent's.....dis 55&10
Melting, Reading.....dis35&10
Melting, Monroe's Patent.....℔ doz $4.00, dis 40
Melting, P. S. & W .....dis 35&10@40

### Lanterns

Tubular Standard No. 0.....℔ doz 6.75@7.00
" " " 1..... " 8,25@8.50
Guards for tubulars adds 25 cents per doz.
Tubular. Lift Wire. No. 0. ℔ doz.....8.50
Tubular. Lift Wire. No. 1. ℔ doz.....10.00
Police. Small. $6.00; Med.. $7.25; Large. $9.75.....dis10@15

### Locks, Bolts, etc.

[Nimick & Brittan Manufacturing Co., Pittsburgh].
Discount Sheet No. 8 [March 10, 1886].
No. 0221..... $2.40 per doz.
No. 0401..... 2.65 "
No. 01051..... 2.40 "
Door locks, knobs and latches.....dis 45
Escutcheons and keys.....dis 45
Sash locks.....dis 55
Padlocks and padlock keys.....dis 75
Bell pulls, mineral, porcelain and jet.....dis 40
Bell pulls, bronze plated..... .....dis 40
Bell pulls, Egyptian bronze.....dis 40
Bell pulls, genuine bronze.....dis 50
Lever bell pulls, genuine bronze.....dis 55
Butts, genuine bronze.....dis 60
Butts, bronze plated.....dis 70
Butts, Egyptian bronzed.....dis 70
Store door locks and latches.....dis 60
Store door handles.....dis 60
Shutter hinges and flaps, genuine bronze.....dis 60
Shutter hinges, bronze plated.....dis 75
Shutter hinges, Egyptian bronzed.....dis 75
Shutter flaps, bronze plated.....dis 60
Shutter flaps, Egyptian bronzed.....dis 60
Parliament butts, genuine bronze.....dis 60
Parliament butts, bronze plated.....dis 75
Parliament butts, Egyptian bronzed .....dis 75
Flush bolts, genuine bronze.....dis 60
Flush bolts, bronze plated.....dis 75
Flush bolts, Egyptian bronzed.....dis 75
Shutter knobs, genuine bronze.....dis 60
Shutter knobs, bronze plated.....dis 70
Shutter knobs, Egyptian bronzed .....dis 60
Shutter bars, genuine bronze.....dis 60
Shutter bars, bronze plated .....dis 70
Shutter bars, Egyptian bronzed .....dis 70
Sash lifts, genuine bronze .....dis 50
Sash lifts, bronze plated..... .....dis 70
Sash lifts, Egyptian bronzed.....dis 70
Sash pulls and plates, genuine bronze.....dis 60
Push plates, genuine bronze.....dis 60
Drawer pull genuine bronze.....dis 50

### Lemon Squeezers.

Porcelain lined.....℔ doz $6 00, dis 25&30
Wood.....℔ doz $3 00, dis 35
Eureka, tinned .....℔ doz $8 00, dis 10
Dunlap's improved.....℔ doz $3 75, dis 20
Sammis'.....No. 1. $5; 2, $9, 12, $18 ℔ doz dis25&10
Townsend's patent.....$6 00 ℔ doz dis 33⅓
Jennings' "Star" ..... doz $2 50
The "Boss" .....℔ doz $2.50
Dean's No. 1. ℔ doz $6 50; 2, $3 25; 3, $1 90....dis 55
Little giant.....dis 50
Acme.....℔ gross $55 00, dis 50

### Lines.

Cotton Chalk.....dis 55
Silver Lake, Braided, Nos, 0, $6.00; No. 1. $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gross .....dis 25
Masons' Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50 Net
Masons' Colored Cotton.....dis 45
Wire Clothes, No 18, $3.75; No 19, $3.25; No. 20 $2.75; .....
Drawer pulls, bronze plated .....dis 70
Drawer pulls, Egyptian bronzed.....dis 70
Letter box plates, genuine bronze.....dis 00
Letter box plates, bronze plated.....dis 60
Letter box plates, Egyptian bronzed .....dis 65
Scales.....dis 40
Thumb latches, Egyptian bronzed.....dis 75
Barn door locks .....dis 33⅓

### Lumber Tools.

Ring peavies, "Blue Line" finish.....℔ doz $20 00
Ring peavies, common finish.....℔ doz $18 00
Steel socket peavies.....℔ doz $21 00
Mall. iron socket peavies.....℔ doz $19 00
Cant hooks, "Blue Line" finish.....℔ doz $16 00
Cant hooks, common finish.....℔ doz $14 00
Cant hook's mall. socket clasp, "Blue Line" finish.....℔ doz $16 00
Cant hooks, mall, socket clasp, common finish.....℔ doz $14 50
Cant hooks, clip clasp, "Blue Line" fin.. ℔ doz $14
Cant hooks, clip clasp, common finish...℔ doz $12
Hand spikes.....℔ doz 6 ft., $15 00; 8 ft., $20 00
Pike poles, pike and hook—

| | 12 ft. | 14 ft. | 16 ft. | 18 ft. | 20 ft. |
|---|---|---|---|---|---|
| ℔ doz,..... | $11.50 | $12 50 | $14 50 | $17 50 | $21 50 |
| Pike poles, pike only, ℔ doz..... | $10 00 | $11 00 | $13 00 | $16 00 | $20 00 |
| Pike poles, not ironed, ℔ doz..... | $6 00 | $7 00 | $9 00 | $12 00 | $16 00 |
| Setting poles, doz | 14 00 | $15 00 | $17 00 | | |

Swamp hooks .....℔ doz $18 00
Landing blocks.....℔ doz $22 50
Skidding tongs.....℔ doz $51 00
Log binders.....℔ doz $26 00
Bended boot calks, 1 to 5 M, dis 25; 5 to 10 M, dis 30
Square steel boot calks..... dis 40
Chain rafting dogs.....℔ 100 $12 50
Ring rafting dogs..℔ 100, med., $10 00; large $12 00
Timber grapples.....℔ doz $30 00

### Mallets.

Hickory .....dis 20&10
Lignumvitæ.....dis 20 &10
Penfield Block Co., Lignumvitæ and Hickory..... ... .....dis 30@30&10

### Mattocks.

Regular list... .....dis 60@60&10

### Meat Cutters.

Dixon's (P.S.&W.) 1 2 3 4 [&5
℔ doz. $14.00 $17.00 $19.00 $30.00 dis 45
Draw CutNos. 5 2 6 8 10
Each.....$50.00 $75.00 $80.00 $225.00 400.00 dis 20@25
Woodruff's (P S & W) per doz No 100 No 150
$15 $18dis 45
Hale's—Nos. 11 12 13 [&5
$27 $33 $45 dis 70@70&5

### Mincing Knives.

Am. (2d quality), ℔ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's .....dis 20&10
Smith's, ℔ doz. single, $2 00; double, $3 00 dis 40@45
Cowles Hardware Co.....dis 50&10@60

### Money Drawers.

℔ doz.,.....$18 00

### Molasses Gates.

Stebbins' pat'..... dis 70&10@75&5
Stebbins' genuine .....dis 66⅔&10
Stebbins' tinned ends.....dis 40&10
Chase's hard metal .....dis 50&10
Bush's.....dis 20
Lincoln's pattern.....dis 66⅔&10
Weed's .....dis 20&10
Boss Nos.... 1 2 3 4
$7 00 8 00 9 00 10 00 ℔ doz. dis 60&10&10

### Nails.

Salem Standard Penny Nails,.....$4 00 Base

### Nuts and Washers.

Square nuts ⅜ and smaller, .....9½c off list
Square nuts, 7-16 and larger,.....8½c off list
Hexagon nuts, ⅜ and smaller.....10½c off list
Hexagon nuts. 7-19 and larger. .....9½ off list
Washers. ⅜ and 7-16 smallers.....9½c off list
Washers, 7-16 and larger .....8¾ off list
In lots less than 100 lbs., ℔ lb add ½c to list, 1 lb boxes 1c to list.

### Nut Crackers.

Table (Humason & Beckley Mfg. Co.).....dis 40
Blake's pattern.....℔ doz. $2 00, dis 10
Turner & Seymour Mfg. Co.....dis 50

### Oakum.

Government.....℔ lb 6¼c
U. S. Navy.....℔ lb 6 c
Navy .....℔ lb 5½c

### Oilers.

Zinc and Tin..... dis65&5@70
Brass and Copper.....dis 50&10
Malleable (Hammer's), No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz..... .....dis 10@ 10&10

### Packing, Steam.

N. Y. Belting & Packing Co .....dis 50@50&10
American Packing.....10@11c
Russia Packing.....14c
Italian Packing.....14@15c
Cotton Packing .....15@18c

### Pencils.

Faber's Carpenters' .....high list, dis 50
Faber's Round Gilt.....℔ gro $5.25 net
Dixon's Lead.....℔ gro $4.50 net
Dixon's Lumber.....℔ gro $6.75 net
Dixon's Carpenter's.....dis 40&10

### Picks.

Railroad, 5 to 6 lbs.....$11 dis 60@60&10
... .. 6 to 7 lbs.....$12 dis 60@60&10

### Pinking Irons.

℔ doz .....65c. net

### Picture Nails.

Brass head, Sargent's list..... } dis 50&10&10
Brass head, combination list.....dis 50&10
Porcelain head Sargent's list, dis.....50&10&10
Porcelain head, combination list.....dis 40&10

### Plane Irons.

L. & I. J. White.....dis 25

### Pliers and Nippers.

Button's Patent .....dis 30&10@40
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21 00 ℔ doz. .....dis 20&10@33⅓
Gas Pliers.....dis 60
P. S. & W. Cast Steel .....dis 50
P. S. & W. Tinners' Cutting Nippers add 6 per cent. dis 10

### Plumbs and Levels.

Standard list.....dis 70&10@70&10&10
Disston's.....dis 45&10
Pocket levels.....dis 70&10@70 &10&10
Davis' inclinometers.....dis 10&10

### Post Hole and Tree Augers.

Samson Post Hole Digger..℔ doz. $36.00, dis 20&10
Fletcher Post Hole Augers ....℔ doz. $36.00, dis 20
Eureka Diggers.....℔ doz. $16.00 @ $17.00
Leed's.....per doz $8.00 @9 00
Vaughan's Hollow Tube Post Hole.....$24.00 dis33⅓@35⅓&5

### Potato Parers.

White Mountain.....℔ doz $5.00@$5.50
Antrim Combination.....℔ doz $8.00
Hoosier .....℔ doz $13.50

### Pruning Hooks and Shears.

Disston's Combined Pruning Hook and Saw ℔ doz $18.00.....dis 20&10
Disston's Pruning Hook.....℔ doz $12.00 dis 20&10
E. S. Lee & Co.'s Pruner.....dis 40
Pruning Shears .....℔ doz 3.75@$4.00 net

### Pulleys.

Hot House ..... discount 60&10
Japanned Screw..... discount 60&10
Brass Screw.....discount 60&10
Japanned Side.....discount 66⅔&10
Japanned Clothes Line.....discount 60&10

### Pumps.

Cistern, best makers.....dis 50
Pitcher spout, best makers.....dis 60
Pitcher spout, cheaper goods.....dis 70@70& 5

### Punches.

Saddlers' or Drive.....℔ doz. good quality, 65@70c
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5
Bemis & Call Co.'s Springfield Socket.....dis 50&5
Solid Tinners.....℔ doz. $1.44, dis 55

### Rails.

Sliding Door, Wrought Brass...℔ lb 35c dis 20@25
Sliding Door, Iron, Painted℔ foot 4c dis 20&10&5

### Rakes.

Cast Steel..... dis60&10@60&10&10
Malleable ..... dis 60&10@60&10&10

### Razors.

J. R. Torrey Razor Co.....dis 20
Wostenholme & Butcher..... $10 @£...dis 10

### Rivets.

Iron, in bulk.....discount 45
Copper.....discount 60&5@60&10
Rivet Sets.....dis 50&10&2@50&10

### Rods.

Stair, Brass.....dis 25&2
Stair Black Walnut..... 40c ℔ doz

### Rollers.

Barn door, Sargent's list, ..... dis 60&10&10
Acme (Anti-Friction).....dis 55
Union barn door roller ..... ..dis 70

### Rope.

Manufacturer's list Jul 12, 1886.. dis 1c@1¼ ℔ lb
Manilla.....⅝ inch ℔ lb 13
Manilla..... .....¼ and 5-16 inch ℔ lb 13½
Sisal.....½ and larger .....per lb 9½
" .....⅜.....per lb 10
" .....¼ & 5-16..... per lb 10½

### Rules.

Boxwood..... ..... discount 80&10

### Sad Iron.

From 4 to 10 lbs at factory...per 100 lbs $2.35@2.50
Self-heating.....℔ doz $9 net
Self-Heating, Tailor's.....℔ doz $18 net
Gleason's Shield and Toilet.....discount 25
Mrs. Potts's Irons, double pointed..... dis 40@40&5
Mrs. Potts's Irons, square back.....dis 40@40&5
Enterprise Star Irons.....discount 40
Com. Fluter and Sad Iron...℔ doz $15, discount 15

### Sash Weights.

Per ton .....$22.50

### Saws.

Disston's Circular.....discount 45&10
Disston's hand panel, rip &c.....discount 20& 10
W. M. & C., Champion Regular.....per foot 26c
W. M. & C., " Thin Back.....℔ ft 29 c
Atkins' band..... dis 40
Atkins' circular ..... .....50
Atkins' silver steel diamond X cuts.....℔ ft 75c
Atkins' concave tooth Dexter X cuts.....55c
Atkins' special steel diamond X cuts.....32c
Atkins' tooth X cuts.....30c
Atkins hollow back X cuts.....21@22c
Atkins' shingle, mulay, drag, &c.....dis 45

### Saw Frames.

White, Vermont.....℔ doz $1.50, dis 25&10
Red, polished & varnished ℔ doz $1.50, dis 10@15
Saw rods.....$10 list dis 10&10

### Saw Sets.

Aiken's Genuine.....$13.00, dis 50 &10
Morrill Saw Sets No. 1 $15.00; No. 3 and 4 $24.00 .....dis 40 &10
Atkins' adjustable.....℔doz $6 00
Atkins' criterion.....℔doz $7 50

### Scales.

Hatch, Counter, No. 171 .....℔ doz $21.00
Hatch, Tea, No. 161.....℔ doz $7.50
Chatillon's Grocers .....dis 50
Family Turnbulls.....dis 30@30&10
Scale Beams, List of January 12, 1882 dis 60&5@60&10

### Scrapers.

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....dis 20&10
Box, 1 Handle.....℔ doz $4.00, dis 10
Foot.....dis 50&10@60

### Screen Corners.

Porter's pat. window and door frame..dis33⅓&10
Screen corner irons, Warner's...dis 33⅓@33⅓&10

### Screw Drivers.

Stanley R. & L. Co.'s Varnished Handles dis 60&10
Stanley R. & L. Co.'s Black Handles.....dis 50&10
Sets Interchangeable.....℔ doz $18.00 dis 25

### Screws.

Wood Screws—List Feb 15, 1886.
Flat head iron..... dis 75&10
Round head iron.....dis 70&10
Flat head brass.....dis 75
Round head brass.....dis 70
Flat head bronze .....75
Round head bronze..... 70
Machine, flat head, iron.....dis 60
Machine, round head, iron .....55
nsh and hand—
Bench, iron ..... .....55&10@55&10&10
Bench, wood, beech, per dozen $2.25.....
Bench, wood, hickory.....20 & 10
Hand, wood.....25&10@25&10&5
Lag or coach.....dis 75 @ 75 & 10&5
Coach, patent gimlet point..... 75@75&5
Bed..... 25&5
Hand rail, Sargent's. .....66⅔&10
Hand rail, Humason, Beckley & Co.'s70& 10 @ 75
Hand rail, Am Screw Co.....70

### Saw Tools.

Atkins' excelsior.....℔ doz sets $6 00
Atkins' perfection.....℔doz sets $15 00

### Shears.

American (Cast) Iron.....dis75&10@75&10 & 5
Pruning .....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....℔ doz $3.75
Tinners'.....dis 20&2
Heinsch's List, Dec. 1881.....dis 60 &10
Heinsch's Tailor's Shears.....dis 33⅓

### Scroll Saws.

Lester, complete, $10.00.....dis 25
Rogers, complete, $4.00. .....dis 25

### Sheaves.

Sliding Door M. W. & Co.....list dis45&2
Sliding Door R. & E. listDec 18, 1885... dis 60&2
Sliding Door, Patent Roller.....dis 60&10&2
Sliding Door, Pat'nt Roller, Hatfield's.....dis 70
Sliding Door, Russell's Anti-FrictionDec. 18, 1885 dis 60&2
Sliding Door. Moore's Anti-Friction .....dis 60
Sliding Shutter. R. & E. list..... dis 60&10&2
Sliding Shutter, Sargent's list.....dis 60&10&10
Sliding Shutter, Reading list.....dis 60&10&10
Moore's Anti-Friction.....New list, dis 60

### Ship Tools.

L. & I. J. White.....dis 20 & 5

### Shovels and Tongs.

Iron and Brass Head, R. & E. list dis 60&10&5@60&10&10
Iron and Brass Head, P. S. & W dis 60&10&5@60&10&10

### Sieves.

Buffalo metallic, S. S. & Co.. new list..... dis 50&5
Barler's flour sifters .. .....℔ doz $2 25

### Slates.

School, by case.....dis 45@50

### Spoke Shaves.

Iron.....dis 45
Wood .....dis 30

### Spoke Trimmers.

Bonney's.....℔ doz $10.00 dis 50
Stearns'.....℔ doz $9.00 dis 20&10

### Spoons.

Basting Spoons ..... dis 33⅓&5
Britannia.....dis60&10@60&10&10
Wm. Rogers Mfg Co.....dis 50&10@60
H & E Silver Co. Steel Silver Plated, teas $15.00. Tables $30.00.....dis 50@50&10
Tin .....dis 10@20

### Squares.

Steel and iron .....} dis 70&5@70&10&5
Nickel plated.....} dis 70&5@70&10&5
Try square and T bevels.....dis 60&10
Disston's try square and T bevels.....dis 45&10
Winterbottom's try and miter.....dis 20&10

### Steelyards.

dis 40&10@50&10

### Stocks and Dies.

Blacksmith's .....dis 30&5@40
"Lightining" screw plate .....dis 10&10@25

### Stone.

Hindostan, No. 1, 3¼c; Axe, 4¼c; Slips 5½c
Sand Stone.....℔ lb. 2½c
Washita Stone .....No. 1, ℔ lb 20
Turkey Oil Stone.....4 to 8 in.....℔ lb 60c
Turkey Slips.....$2.00 ℔ lb
Lake Superior.....℔ lb 17c
Lake Superior Slips .....℔ lb 31@32c
Washita Slips No 1.....℔ lb 40
Washita No 2 stone.....℔ lb 16c
Arkansas Stone .....1 45@1 50

### Stove Boards.

Buffalo zinc, S. S. & Co.....dis 50

### Stove Polish.

Joseph Dixon' s.....℔ gross $6 00 dis 10
Gem .....℔ gross 4 50 dis 10
Gold medal.....℔ gross 6 00 dis 25
"Mirror".....℔ gross 6 00 dis —
Lustro.....℔ gross $4 75 net
Ruby.....℔ gross $3 75 net
Rising Sun.....℔ gross $5 75 net
Dixon's plumbago ..... .....℔ lb 8c. net
Boynton's Noon Day, ℔ gro, ..... $5 00;

### Shovels and Spades.

Ames' list Nov 1 1885..... .....discount 20
Griffith's black iron.....dis 50&10
Griffith's steel .....dis 60@60&5
Griffith's solid cast steel R.R. goods.....dis 20

### Trowels.

Lothrops' Brick and Plastering.....dis 20&10
Reed's Brick and Plastering..... .....dis 15
Disston's Brick and Plastering..... .....dis 20&10
Brade's brick..... dis 25

### Tacks, Brads, &c.

New List, September 1. 1882. & Supplement Jan 1, 1886.
American iron carpet tacks all kinds..... dis 75&10
Steel carpet tacks all kinds.....75&10
Swedes Iron carpet tacks all kinds .....75&10
Swedes iron tacks.....75&10
Swedes iron Upholsterers' tacks.....70&10
Tinned Swedes iron tacks .....70&10
Tinned Swedes iron Upholsterers' tacks.....70&10
American iron cut tacks.....75&10
Copper tacks .....65
Copper finishing and trunk nails.....65
Cigar box nails .....55&10
Finishing nails. .....55&10
Hungarian nails and miners' tacks.....60&5
Gimp and lace tacks.....70&5
" " " tinned.....70&5
Trunk and clout nails .....66&5
Tinned trunk and clout nails.....66&5
Basket nails.....66&5
Chair nails .....66&5
Common and patent brads.....65
Tinned capped trunk nails .....45

### Tinware.

Stamped, Central Stamping Co.'s list..... ... .....dis 30&2 } Extras some times given.
Japanned, Central Stamping Co.'s list.....dis 33&2
Pieced, Central Stamping Co..... ..... dis 30&2
Pieced S. S. & Co.....dis 30&2
Japanned S. S. & Co..dis 25&10&2
Stamped, S. S. & Co new list..... .....dis 30&2

## TRAVELER'S REGISTER.

Standard Time.

**Cleveland, Columbus, Cincinnati & Indianapolis.**

DEPARTURE.

No. 3, Col. Cin. & Ind Expr.....7 00 A. M.
No. 5, Col., Cin. Ind. and St L. Ex.....*10 55 A. M
No. 9, Col., Cin., Ind. and St. Louis Ex.* 7 00 P. M
No. 23. Grafton & Wheeling Ex ..... 6 45 A. M
No. 27, Columbus Accommodation ..... 3 30 P. M
No. 29. Massillon and Uhrichville Ex..... 4 10 P. M

ARRIVALS.

No. 2. Col., Cin. Ind and Mattoon Ex.... 9 50 P. M
No. 4. Col., Cin. & St. Louis & Ind. Ex * 2 55 A. M
No. 8, Col , Cin., Ind. and St. Louis Ex. *7 30 A. M
No. 24, St. Louis, Ind. & Col. Ex..... *2 25 P. M
No. 22, Massillon and Uhrichville Ex.... 10 00 A. M
No. 20, Galion Accommodation..... 9 00 A. M
No. 12, Columbus and Cincinnati Ex... *2 35 P. M
No. 26, Wheeling Express..... 6 35 P. M

*Daily .all other trains daily except Sunday.

**N. Y. C. & St. L. R'y—"The Nickel Plate."**

| EASTWARD. | ARRIVE. | DEPART. |
|---|---|---|
| Buffalo Passenger..... | 10 40 a m | 10 45 a m |
| Chicago Passenger ..... | 9 00 p m | ..... |
| Local Freight..... | 4 40 p m | 5 45 a m |
| **WESTWARD.** | **ARRIVE.** | **DEPART.** |
| Chicago Passenger..... | ..... | 6 45 a m |
| Fostoria Passenger..... | 4 46 p m | 4 51 p m |
| Local Freight..... | 5 00 p m | 5 50 a m |

Rocky River Accommodation departs 7 40 a. m.; 1 35 p. m.

Euclid Accommodation departs 6:24 a. m., 10 a. m., 5:05 p. m.

All trains daily, except Sunday.

**Cleveland & Pittsburg.**

| | DEPART. | ARRIVE. |
|---|---|---|
| Mail..... | 7 50 a m | 1 00 p m |
| New York Express..... | 2 10 p m | 6 25 p m |
| Alliance Accommodation..... | 3 45 p m | 10 10 a m |
| Ravenna Accommodation... | 4 50 p m | 8 15 a m |
| Night Express..... | 11 10 p m | 6 00 a m |
| Newburg Accommodation... | 10 15 a m | 11 30 a m |
| Newburg Accommodation... | 12 10 p m | 1 30 p m |

Train leaving at 2 10 p m has Pullman Buffet sleeper from Cleveland to New York without change.

**New York, Pennsylvania and Ohio.**

| | ARRIVE. | DEPART. |
|---|---|---|
| N. Y. & Pitts. Express..... | 16 10 a m | *8 25 a m |
| N. Y. & Pitts. Express..... | *6 35 p m | †11 10 p m |
| Fast N. Y. & Pitts. Express.. | *10 50 a m | *3 00 p m |
| Mahoning Accommodation... | | †7 00 a m |
| Pittsburgh Local Express... | † 10 40 p m | |
| Youngstown Local..... | †8 20 a m | |
| Mahoning div. and Pitts Local | | *12 05 p m |
| Mahoning Val Accom..... | | *4 25 p m |
| Pittsburgh accomodation..... | *1 30 p m | |

* Daily. † Daily except Sunday. ‡ Daily except Monday.

**Lake Shore & Michigan Southern Railroad.**

| TRAINS GOING EAST. | Arrive from West. | Depart East. |
|---|---|---|
| No. 4, Fast Limited Ex..... | *2 55 a m | *3 05 a m |
| No. 8, N. Y., B't'n & At. Ex | *8 25 a m | *8 50 a m |
| No. 26, Elyria Accom..... | †7 45 a m | ..... |
| No. 24, Toledo & Buffalo Accom. via Sandusky..... | †10 30 a m | †10 45 a m |
| No. 24, Toledo Accommodation via Norwalk..... | †10 30 a m | †10 45 a m |
| No. 10, St. Louis & N. Y. Ex. | *11 40 | *12 00 noon |
| No. 12, N. Y. & Bos. Ft. Ex. | *2 10 p m | *2 45 p m |
| No. 2, Night Ex. via Norw'k | 9 40 p m | †10 00 p m |
| No 26, Conneaut Accom..... | | †4 25 p m |
| **TRAINS GOING WEST.** | **Arrive from East.** | **Depart West.** |
| No. 1, Fast Limited Ex..... | *12 15 a m | *12 25 a m |
| No. 23, Cleveland Express | *2 15 a m | |
| No. 3, Chi. Ex. via Sand'y. | ‡6 00 a m | †6 30 a m |
| No. 25, Mich. Ac. via Norw'k | ..... | †6 30 a m |
| No. 21, Toledo Ex. via Norwalk and Sandusky..... | †12 50 p m | †3 20 p m |
| No. 5, Fast St. Louis & Chicago Ex. via Sandusky..... | *10 45 a m | *11 50 a m |
| No. 9, Chi. Pac. Ex. via Nor'k | *6 15 p m | *6 40 p m |
| No. 21, Elyria Accommodation, to Elyria only..... | | †4 30 p m |
| No. 27, Conneaut Accom..... | †8 10 a m | ..... |

†Sunday train for Nottingham— Depart 8:15 a. m. and 1:45 p. m.; returning, leave Nottingham at 8:50 a. m. and 3:45 p. m.

‖Reference marks—*Daily. †Daily except Sunday. ‡Daily except Monday.

A local Cleveland and New York Sleeper daily on No. 12, leaving Cleveland at 2:45 p m, arrives Grand Central Depot, New York, 10:30 a. m.

For further information as to trains and connections apply at the Union Ticket Office, corner Bank and Superior-sts., under Merchants' Bank.

**Cleveland and Canton Railroad.**

Arrive.—Canton, Sherrodsville and Coshocton 10 00 a.m., 6 50 p.m.
Kent —*7 50 a.m., 10 00 a.m., 6 50 p.m.
Bedford—6:00 a.m., *7:50 a.m., 10:00 a.m., 1:05 p.m., 6 40 p.m., 6 50 p.m.
Newburgh and Miles avenue—6-00 a.m., *7:10 a.m., *7:50 a.m., 10:00 a.m., 1 05 p.m., 4:25, p.m. 6:40 p.m., 6.50 p.m., 9:25 p.m.

Depart—
Canton, Sher'dsville & Cosh't'n—7:00 a.m. and 3:10 p.m.
Kent—7:00 a.m., 3:10 p.m., *6:00 p.m.
Bedford—7.00 a.m., 11:10 a.m., 3:10 p.m., 4:55 p.m., *6:00 p.m., 10:35 p.m.
Newburgh and Miles Avenue—6:12 a.m., 7:00. a.m., 11:10 a.m., 2:00 p.m., 3:10 p.m., 4:50 p.m., *6:00 p.m., 8:10 p.m., 10:35 p.m.
Zanesville, Newark, etc., 7:00 a.m., 3:10 p. m.

Theater train leaves Cleveland at 10:35 p.m., and runs through to Bedford.

Trains marked with * run daily. All others daily except Sunday.

Depot at Ontario street, opposite Huron street

**Valley Railway.**

| | ARRIVE. |
|---|---|
| From Canton ..... | 10 10 a m |
| From Canton, Pittsburg and intermediate points ..... | 2 15 p m |
| From Valley Junc., Canton & Akron. | 6 15 p m |
| | **DEPART.** |
| To Akron, Canton and Marietta..... | 8 20 a m |
| To Mahoning Valley points ..... | 2 25 p m |
| To Akron, Canton & Valley Junc..... | 5 48 p m |

*Daily. †Daily except Sunday.

Trains leave depot, South Water Street.

**Cleveland, Lorain and Wheeling.**

| | DEPART. | ARRIVE. |
|---|---|---|
| Wheeling Express..... | 6 45 a m | 6 35 p m |
| Uhrichsville Express..... | 4 10 p m | 10 00 a m |

MACHINERY FOR
Straightening & Cutting Wire
Of all Sizes to any Length.
Send for Catalogue.
JNO. ADT & SON,
New Haven, Conn., U. S. A.

BEE LINE!
The Direct Through Car Route
—FOR—
TOURISTS to DENVER,
Pueb'o, Colorado Springs, Manitou
And all Summer Resorts of
The South and West.

Eastward from Cincinnati, Indianapolis and St. Louis, this route furnishes the quickest through car line to the
White Mountains, Adirondacks, Catskills
and the Sea. Tours via
NIAGARA FALLS
—AND—
THE ST. LAWRENCE RIVER,
With the option of going
DOWN THE HUDSON,
Either by Steamer or Rail,
—TO THE FAMOUS—
Eastern Watering Places,
And all the Renowned Beaches
—OF THE—
ATLANTIC COAST,
This line has no superior.

P.S.—Get tickets via BEE LINE, (C. C. C. & I. R'y.—D. & U. R. R.—I. & St. L. Ry.)
A. J. SMITH, Gen'l Pass. Agent.

## Cleveland & Marietta R. R.

New Through Line Between the Ohio River and the Great Lakes.

The popular line to Chicago, St. Paul, Milwaukee, Minneapolis, and all points in the Great Northwest. Direct connection for the Pennsylvania Oil Fields and all points East and Southeast. December 6, 1885.

| GOING NORTH. Exp. No. 2 | Exp. No. 4 | STATIONS. | GOING SOUTH. Exp. No. 3 | Exp. No. 1 |
|---|---|---|---|---|
| am | pm | | pm | pm |
| 6 20 | 2 30 | lv.....Marietta..... ar. | 7 20 | 12 50 |
| 6 43 | 2 56 | .....Stanley..... | 6 52 | 12 23 |
| 7 06 | 3 20 | .....Warner..... | 6 29 | 11 58 |
| 7 25 | 3 42 | .....Macksburg..... | 6 10 | 11 38 |
| 7 32 | 3 50 | .....Dexter City..... | 6 02 | 11 30 |
| 7 53 | 4 11 | .....Caldwell..... | 5 40 | 11 04 |
| 8 28 | 4 45 | .....Mt. Pleasant..... | 5 05 | 10 19 |
| 8 38 | 4 55 | .....Byesville..... | 4 55 | 10 02 |
| 8 50 | 5 10 | .....Cambridge.....ar. | 4 30 | 9 45 |
| 9 47 | 6 20 | .....New Comerstown..... | 3 27 | 8 47 |
| 10 28 | 6 55 | .....Canal Dover..... | 2 38 | 8 00 |
| | pm | | | am |
| 10 51 | 7 20 | .....Valley Junction.....lv | 2 12 | 7 35 |
| | | | pm | pm |
| am | am | .....Valley Junction..... | 11 48 | 8 35 |
| 11 39 | 7 58 | .....Canton..... | 10 58 | 7 52 |
| pm | ..... | | am | pm |
| 12 33 | 8 54 | .....Akron..... | 10 00 | 7 00 |
| pm | am | | am | pm |
| 1 50 | 10 15 | lv.....Cleveland.....ar. | 8 35 | 5 40 |
| pm | pm | | | |
| 8 00 | 6 20 | .....Buffalo..... | | |
| pm | pm | | pm | |
| 1 10 | 10 05 | .....Orrville..... | 12 20 | 6 00 |
| | | | | am |
| 1 55 | 10 45 | .....Creston.....lv | 11 50 | 5 30 |
| 2 40 | 11 28 | .....Wellington..... | 11 00 | 8 10 |
| | am | | | |
| 3 27 | 12 10 | .....Norwalk..... | 10 13 | 7 12 |
| 3 44 | 12 25 | .....Monroeville..... | 10 00 | 7 02 |
| | | | am | p m |
| 5 55 | 5 20 | .....Toledo..... | 7 50 | 5 00 |
| pm | p m | | | |
| 12 35 | 11 55 | .....Columbus..... | ..... | ..... |
| am | am | | | |
| 5 40 | 8 50 | .....Chicago..... | ..... | ..... |
| pm | am | | | |
| 3 30 | 6 00 | .....Pittsburgh..... | ..... | ..... |
| am | p m | | | |
| 7 00 | 6 55 | .....New York..... | ..... | ..... |

NO. 17, ACCOMMODATION.

| | a.m | | a.m |
|---|---|---|---|
| Cambridge..... | 6 30 | Macksburg..... | 9 00 |
| Byesville..... | 6 55 | Warner..... | 9 30 |
| Pt. Pleasant..... | 7 15 | Stanley..... | 10 02 |
| Caldwell..... | 8 17 | Marietta..... | 10 35 |
| Dexter City..... | 8 47 | | |

s Stop on signal only.

Connections made with all lines at junction points for all important cities east and west.

A. T. WIKOFF, Receiver.
W. A. McCloy, Acting Gen. Pass. Agent,

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ELECTROTYPE
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MACKINAC.
Summer Tours.
Palace Steamers. Low Rates.
Four Trips per Week Between
DETROIT, MACKINAC ISLAND
St. Ignace, Cheboygan, Alpena, Harrisville, Oscoda, Sand Beach, Port Huron, St. Clair, Oakland House, Marine City.
Every Week Day Between
DETROIT AND CLEVELAND
Special Sunday Trips during July and August.
OUR ILLUSTRATED PAMPHLETS
Rates and Excursion Tickets will be furnished by your Ticket Agent, or address
C. D. WHITCOMB, Gen'l Pass. Agent,
Detroit & Cleveland Steam Nav. Co.
DETROIT, MICH.
T. T. NEWMAN, P. & F. A.,
33 River Street. Cleveland, O.

The Picturesque Lehigh Valley Route

Three through trains with Pullman cars attached are now run via by this beautiful scenic route, between Suspension Bridge, Buffalo, New York and Philadelphia, leaving Suspension Bridge 8:18 A. M. 4:10 and 7:45 P. M., Buffalo 9:00 A. M. and 4:40 and 10:00 P. M., connecting with all trains from the West.

Passengers between the East and West passing over the famed LEHIGH VALLEY ROAD will experience the pleasure of a trip through the most magnificent and picturesque scenery in the world, presenting an ever varying panorama of delightful surprises.

Double track, steel rails, magnificent road bed and unrivaled equipment, all combine to make the LEHIGH VALLEY the favorite and most desirable route between the East and the West.

Anthracite Coal is used entirely, guaranteeing to passengers perfect freedom from the dense volumes of smoke that so greatly annoy passengers on lines using Bituminous Coal.

E. B. BYINGTON,
Gen'l Pass. Agent, Mauch Chunk. Pa

## The New York, Chicago & St. Louis

RAILWAY COMPANY.

The Passenger Equipment of this Line is all new and is supplied with the latest appliances necessary to safe, speedy and comfortable travel.

Trains depart from and arrive at Union Railway Depot, Van Buren street, Chicago, and N Y., L. E. & W. Railway Depot at Buffalo.

Following is time in effect April 25, 1886 and until further notice:

| GOING WEST. Local Fr'ht | | Lv | | Ar | GOING EAST. | Local Fr'ht |
|---|---|---|---|---|---|---|
| | a.m | | | p.m | | |
| | 9 40 | ..... | Buffalo ..... | 5 45 | | |
| | 12 50p.m | ..... | Erie, ..... | 2 33 | | a.m |
| | 2 43 | ... | Ashtabula... | 12 44 | | 9 47 |
| | 3 43 | .. | Painesville .. | 11 55 | | 7 46 |
| | 3 56 | .. | Willoughby .. | 11 33 | | 7 00 |
| | 4 46 | ar | Cleveland lv | 10 45 | | 5 45 |
| a.m | | | | | p.m | p.m |
| 5 50 | 4 51 | 6 45 lv | " ar | 10 40 | 9 00 | 4 40 |
| 8 20 | 6 06 | 7 53 | .....Lorain..... | 9 31 | 7 56 | 2 40 |
| 9 12 | 6 30 | 8 15 | .. Vermillion .. | 9 11 | 7 34 | 2 00 |
| | | | | | | p.m |
| 11 00 | 7 35 | 9 10 | .....Bellevue ... | 8 00 | 6 25 | 12 01 |
| | 8 05 | 9 45 | Green Springs | 7 35 | 5 54 | |
| | | | | a.m | | |
| | 8 50 | 10 25 | .....Fostoria..... | 6 50 | 5 00 | |
| | | 10 37 | .....Arcadia ..... | | 4 49 | |
| | | 11 32 | ..... Leipsic..... | | 3 57 | |
| | | 1 50p.m | Ft. Wayne | | 1 30 | |
| | | 7 50 | .....Chicago..... | | 7 50 | a.m |

Through Tickets to all points are on sale at principal offices of the Company at lowest rates for any class of tickets desired. Baggage checked to destination.

B. F. HORNER,
General Passenger Agent.
LEWIS WILLIAMS,
General Manager. Cleveland. O.

## Pittsburgh & Lake Erie Railroad.

On and after November 16, 1886, passenger trains will depart from and arrive at the Pittsburgh and Lake Erie Depot at Pittsburgh, as follows, Central time:

P. & L. E. R.,R. Depart for—

No. 7, Cleveland, Bradford and East,..... 6 30 a.m
No. 5, Buffalo, St. Louis, Cleveland ..... 7 20 a.m
No. 51, Beaver Falls Accommodation..... 8 30 a.m
No. 1, Buffalo, New York, and all New England points,.....10 20 a.m
No. 3, Chicago, Cincinnati, St. Louis,...12 55 p..m
No. 9, Buffalo Express..... 3 40 p.m
No. 11, Beaver Falls Accommodation..... 5 50 p.m

Arrive from—

No. 8, Buffalo and Cleveland Night Exp. 5 55 a.m
No. 10, Beaver Falls Accommodation.... 7 28 a.m
No. 2, Youngstown Accommodation,..... 9 10 a.m
No. 12, Chicago, Cincinnati & St. Louis, 12 45 p.m
No. 50, Beaver Falls Accommodation,... 1 35 p.m
No. 6, Buffalo Express,..... 5 10 p.m
No. 4, Cincin., St. Louis and Cleveland, 7 50 p.m

Pit sburgh & Lake Erie trains Nos. 2, 3, 5, 9, and 12 daily.

W. C. QUINCY, General Manager.
R. W. JONES, Master of Transportation.
GEO. REPPERT, Ticket Agent.
A. D. SMITH, Gen'l Pass. Ag't, Pittsburgh.

## New York, Penn. and Ohio Railroad

N.Y., L.E. & W. R.R. CO. LESSEES.

**New York, Boston and the East.**

THE SHORTEST AND QUICKEST ROUTE TO PITTSBURGH, WASHINGTON AND BALTIMORE, AND THE SOUTHEAST.

Change of time goes into effect July 11, 1886.

Central, or Ninetieth Meridian time, 33 minutes slower than Cleveland city time.

Until further notice trains will leave from the New Central Depot, South Water Street and Viaduct, as follows:

| | Depart. |
|---|---|
| No. 62, Mahoning Valley Accommo ..... | † 6 45 a m |
| No. 72, New York Express..... | * 8 25 a m |
| No. 72, Fast Pittsburgh Express ..... | * 8 25 a m |
| No. 64, Fast New York Express..... | * 3 00 p m |
| No. 64, Pittsburgh Express..... | * 3 00 p m |
| No. 66, Mahoning Valley Accommo ..... | * 5 00 p m |
| No. 68, New York Express,..... | †11 10 p m |
| No. 68, Pittsburgh Express..... | †11 10 p m |
| No. 70, Pittsburgh Local Express..... | *11 55 a m |
| | **Arrive.** |
| No. 61, New York Express..... | † 6 10 a m |
| No. 61, Pittsburgh Express..... | † 6 10 a m |
| No. 65, Fast New York Express..... | *10 50 a m |
| No. 65, Pittsburgh Express,..... | *10 50 a m |
| No. 67, Pittsburgh Express..... | * 1 10 p m |
| No. 63, New York Express..... | * 6 35 p m |
| No. 63, Pittsburgh Express, ..... | * 6 35 p m |
| No. 69, Pittsburgh Local Express ..... | † 9 25 p m |
| No. 77, Youngstown Local ..... | † 8 05 a m |
| No. 13, Erie Express, carrying express matter only, from all points East and South-east, carries no passengers..... | ‡ 1:10 p m |

* Daily. † Daily, except Sunday. ‡ Except Monday.

☞ This is the only route by which passengers can reach Corry, Elmira, Binghampton, New York City and intermediate points without change. One change to Boston and New England cities.

Baggage checked through to all points East.

Through tickets and information regarding the route can be obtained at office, 224 Bank street, and at Depot N.Y., P. & O. Railroad, South Water street and Viaduct, Cleveland. Ship by Erie Express.

A. E. CLARK, Ass't Gen'l Pass. Agent, Cleveland, O.
J. R. SHALER, General Superintendent, Cleveland, O.
M. L. FOUTS, Passenger Agent, 224 Bank Street, Cleveland, O.

## Ft. Wayne, Cincinnati & Louisville RAILROAD.

THE POPULAR ROUTE BETWEEN THE

**NORTH and SOUTH**

THE DIRECT ROUTE TO OR FROM FORT WAYNE, INDIANAPOLIS, TERRE HAUTE, EVANSVILLE, AND ST. LOUIS.

13 MILES SHORTER —BETWEEN— 13

**Fort Wayne and Indianapolis**

Than any other Route.

22 MILES SHORTER AND QUICKER 22

By 3 HOURS, Between

**Louisville and Fort Wayne.**

No change of Cars

—BETWEEN—

**Cincinnati and Fort Wayne,**

Via White Water Railroad.

All trains arrive and depart from Central Union Passenger Station Cincinnati, Corner Third Street and Central Avenue.

DIRECT CONNECTION

At Fort Wayne with L. S. & M. S. Trains for all points North and East.

Ask for Tickets

—VIA—

**Ft. Wayne, Cincinnati & Louisville Railroad.**

For sale by all Agents of connecting lines. EAST, WEST, NORTH AND SOUTH.

W. W. WORTHINGTON, Gen'l Supt. ROBT. F. KINNAIRD, Gen'l Ticket Agent, FORT WAYNE, IND.

## Chagrin Falls & Southern RR.

TIME TABLE.

Went into effect May 10th, 1886.

Standard Time.

| | | | | |
|---|---|---|---|---|
| Chagrin Falls..lv. | 6 45am | 9 15am | 12 10pm | 5 00pm |
| Collins ..... | 6 55 | 9 25 | 12 20 | 5 10 |
| Chamberlins ..... | 7 05 | 9 35 | 12 30 | 5 20 |
| Solon.....arrive | 7 15 | 9 45 | 12 40 | 5 30 |
| VIA N.Y.P.& R.R. | | | | |
| Solon .....leave | 7 25 | 10 15 | 12 50 | 6 05 |
| Newburgh..... | 7 50 | 33 | 1 10 | 6 20 |
| Cleveland,..... | 8 05am | 105 | 1 30pm | 6 35pm |
| Cleveland, leaves | 6 45am | 8 25am | 3 00pm | 5 00pm |
| Newburgh, ..... | 7 03 | 8 40 | 3 15 | 5 20 |
| Solon, .....arrive | 7 25 | 8 56 | 3 38 | 5 45 |
| VIA N.Y., P.& O.RR. | | | | |
| Solon .....leave | 7 30 | 10 20 | 3 45 | 5 50 |
| Chamberlins ..... | 7 40 | 10 30 | 3 55 | 6 00 |
| Collins..... | 7 50 | 10 40 | 4 05 | 6 10 |
| Chagrin Falls ..... | 8 00am | 10 50am | 4 15pm | 6 20pm |

J. W. WILLIAMS, Gen'l Supt.

**Tobacco Cutters.**

Enterprise Mfg. Co. (Champion)..... dis 20&10@30

**Transom Lifters.**

Wollensak's Patent ..... dis 50

**Traps.**

Game, Newhouse.....dis 35
Wood, mouse.....15c ℔ doz holes
Delusion, mouse.....℔ gross $18 00 dis 15

**Twine.** BC. P.

No. 12, Flax Twine, ¼ and ½ lb Balls...22c 24c.....
No. 18, " " ¼ and ½ " ...20c 22c.....
No. 36, " ¼ and ½ " ...19c 21c.....
No. 264, Mattrass ¼ and ½ " .....50c
Chalk Line, Cotton, ½ lb Balls.....28c
Mason Line, Linen, ½ " .....60c
2-Ply Hemp, ¼ and ½ lb Balls (Spring Twine)14½
3-Ply " 1 lb Balls.....15c
3-Ply " 1½ lb Balls .....13c
Cotton Wrapping, 5 Balls to lb.....14@20c

**Vises.**

Solid box.....50 &10@60
Parker's.....discount 20@25
Prentiss..... " 25@25 &5
Stephen's..... " 25
Saw Filers, Wentworth's .....dis20&10
Saw filers, Stearn's .....dis 40

**Washer Cutters.**

Smith's Patent .....℔ doz $12 00, dis 20&10&10
Johnson's .....℔ doz $11 00, dis 33⅓
Penny's.....℔ doz Pol. $14 00; Jap'd. $16 00, dis 55
Appleton's.....℔ doz $16 00, dis 60&10
Benney's.....dis 30&10

**Well Wheels.**

8 in., $1.75; 10 in., $2.95; 12 in., $2.75

**Wire.** New List Jan.18,1884

Brass and Copper.....discount 33⅓@30&10
Bright and annealed, Nos. 0 @18 dis 72½@72½&5
" " Nos. 19 @ 26 .....dis 65&10
" " Nos. 27 @ 36..... dis 75
Coopered Nos. 0 to 18, market list...dis65 & @ 70
Galvanized Nos. 0 to 18, " " dis 60&5&10@65
Tinned market No. 0@18.....dis 60&5
Cast steel ..... dis 50
Tinned Broom Wire.....dis 65
Annealed Fence, Nos. 8 and 9.....dis65&5
Annealed Grape, Nos. 10 to 14.....dis 65&5
Fence Staples .....℔ lb 3½
Fence Staples, galvanized.....℔ lb 4½
Stubs Steel Wire regular.....$6 00.@lbdis 30
Barb Wire, galvanized .....℔ lb 4⅞@5

**Wrenches.**

Coe's genuine, cash in 10 days..... 60 & 3
Girard Standard.....discount 70&10
Agricultural .....discount 80
Mechanics' .....dis 60&10 & 3
American adjustable.....dis 45
Coes' pattern, malleable.....dis 80& 5
Coes' pattern, wrought .....dis 80&10@80&10&5

**Wringers.** Per doz.

No. 2½ Universal.....$27 00
No 2 Universal..... 30 00
Novelty for Common Tubs, No. 2, 10-inch ...$27.00
Novelty, for Common Tubs, No. 3, 11-inch... 31.50
Excelsior, with Folding Bench, No. A, 10-in. 45.00
Excelsior, with Folding Bench, No. B, 11-in. 49.50
Peerless No. 2½..... 27.00
Peerless No. 3½..... 31 50
dis 5@10 ℔ cen

## TINNERS' STOCK.

**Tin.**

Banca.....per lb.22½@23
Straits ..... " 22½@23
English ..... " 22½@23
Bar ..... 23½@24

**Spelter.**

American, cash. ℔ lb..... 4⅝@5c
Bergenport.....9c

**Charcoal Tin Plate.**

IC 12x12 225 sheets..... $5 25@7 50
IX 14x20 112 sheets..... 6 25@9 25
DC 12½x17 100 sheets..... 5 00@5 50
DX 12½x17 ..... 6 25@7 00
IC 10x14 225 sheets.....℔ box 5 00@7 50
IC 20x28 112 sheets.....10 25@15 25
IX 10x14 225 sheets ..... 6 25@9 25
IX 12x12 225 sheets ..... 6 25@9 50
For each additional X add $1 25@$2 00.

**Coke Tin Plate.**

| | Best | Ordinary |
|---|---|---|
| IC 10x14 } IC 14x20 } | $4 75 | $4 55@4 60 |
| IC 12x12 | 4 87½ | 4 75@— |
| IC 10x10 (Gutters 225 sheets).. | 3 00 | 7.25@— |
| IC 20x28 (112 sheets) | | 10 25 |

**Solder.**

Half and Half, in bars warranted.....14¼@14½
No. I, Refined.....11¼@12

**Zinc.**

Zinc, cask.....5 50@5 70
Zinc, open.....6¼@6¾

## LEAD.

Pig.....5@5¼c
Bar. ℔ lb .....5¼@5¾c
Pipe. ℔ lb.....6¾c, discount 20 per cent
Sheet. ℔ lb.....7¾c. discount 20 per cent
Tin-lined pipe.....15c, discount 20 per cent
Block .....40c
Chilled Shot ℔ bag 25 lbs ..... 1 70

**Babbit Metal.**

N P U.....℔lb6½@7c
X.....10c
XX.....15c
JB.....20c

## COPPER.

Lake Ingot.....12@12¼
Baltimore..... 10⅝@10¾
Arizona..... 10¼@11c

## IRON AND STEEL.

**Flat Bar.**

1½ to 4 by ⅜ to 1 inch.....1 55
1¼ to 6 by ⅜ to 1 inch.....1 75
1½ to 6 by 1⅛ to 1 inch.....2 05
1¼ &1⅜ by ⅜ to ¾.....1 75
1 &1⅛ by ¾ to ¾.....1 80
⅝ ¾ and ⅞ by ⅜ to ⅝.....2 50

**Round and Square.**

1 to 1⅛ inch.....1 65
1 to 2¾.....1 85
2¾ to 3¼ inches.....2 51
3¼ to 4 .....2 65
4¼ to 4½ .....3 15
4¾ to 5 .....3 35

**Oval.**

⅜ to 1¼ inch.....2 05
⅜ to ¾ .....2 52
½ .....
⅝ .....2 54
⅜ .....2 85

**Hoops.**

1¼ to 4, Nos. 13 to 15.....2 45
1¼ to 2, Nos. 16 to 18.....2 55
1 and 1⅛, Nos. 13 to 15.....4 05

**Heavy Band.**

1½ to 6 by ¼ and 5-16 inch..... 199
1 to 1⅝ by ¼ and 5-16 inch..... 191
¾ to ⅞ by ¼ and 5-16 inch.....296
⅝ to ⅞ by ¼ and 5-16 inch.....299

**Half Oval and Half Round.**

1½ to 3 inch.....2 75
⅞ to 1¼ .....2 35
⅝ to ¾ .....2 85
½ .....3 15
⅜ .....4 65

**Light Band.**

1½ to 6 by ⅛ to 3-16.....2 15

**Sheet Iron.**

No. 22 to 24.....2 80
No. 25 to 26.....3 00
No. 27.....3 20
No. 28 .....3 40

**Steel.**

Best Quality Refined Cast Steel—Square, Flat Octagon and Round. Cents.

⅝ to 2 inches, inclusive..... 9
1-16 and 2½ to 3 inches.....10
¼ and 3½ to 4 inches.....11
7-32 and 4½ to 5 inches.....12
3-16 and 5½ to 6 " .....14½
5-32 " .....18½
⅛ " .....25½
Oil well steel forgings.....18½

**Machinery Steel.**

| | Crucible. | Bessemer & open-h'rth. |
|---|---|---|
| Ordinary sizes, ⅝ to 2 in. round..... | 4 | 3 |
| 5-16 and 2½ to 3 in..... | 5 | 4 |
| ¼ and 3½ to 6 in..... | 6 | 5 |
| 7-32 in..... | 7 | 6 |
| 3-16 in..... | 9 | 8 |

Square, Flat and Octagon, ½c. extra throughout list.
Cut to specified lengths, ½c. extra.

**Hammer Cast Steel.**

Cts. ℔ lb.
Crucible cast steel.....5
Open-hearth steel.....4

**Sheet Steel.**

| | Crucible Best. | Crucible 2d. Qual. | Crucible 3d. Qual. | Bessemer & open-h'rth. |
|---|---|---|---|---|
| To 21 gauge, | 9c. | 8c. | 6c. | 5 |

1c. extra for each additional gauge. Cut to multiples or specified lengths, ½c. extra.

**Miscellaneous Cast Steel.**

Augur and augur bit ..... 3
Axle steel for wagons..... 3
Frog points and plates ..... 5½
Frog size bars ..... 5
Pick, hammered..... 5
Skate Steel..... 4½
Mattock, beveled..... 3
Table cutlery..... 3½
Table Cutlery, beveled..... 4
Trap spring steel..... 6
Pike and cant hook..... 7
Coal and granite wedge ..... 7
Roller ..... 5½
Spindle, subject to machinery classification. 5½
Trap spring steel..... 6
Forged crank pins and lathe spindles..... 7½
Piston rods, plain ..... 4
Piston rods, forged to shapes ..... 7½
Slide bars, plain..... 5
Slide bars, forged to shapes..... 7½

**Open Hearth or Bessemer.**

Boiler fire-box and flue sheets not less than 3-16 thick .....4c
Boiler, fire-box and flue sheets not less than ⅛ thick .....5c
Circulars and semi-circulars, when ordered separately ..... 6c
Smoke stack, to shape.....5c
Locomotive tank steel.....4c

**File Cast Steel.**

Square, round, half round and flat bastard, 8-inch and over .....
Mill saw, 8-inch and over.....5c
Taper, 3½ inch and over.....6c
Horse and shoe rasp .....5c

**Spring Cast Steel.**.....4c

Spiral, taper, cut to lengths.....5½c

**Fire Cast Steel.**

1x¼ and over.....6½c
1x3-16 ⅞x3-16 and ¼.....7c
1 and 1-16x¼ and 5-32, ¾x3-16 and 5-32.....9c
¾ and ⅝x⅛ and 3-32 and 12g.. .....10c
Solid safe cast steel.....4c
Three and five ply cast steel.....5c

**Agricultural Implement Cast Steel.**

Fork and rake, crucible.....4¼
Horse rake steel, cut to lengths, crucible.....5
Hoe, crucible.....5
Corn stalk cutter, beveled.....4½
Beveled hoe and shovel steel, in bars.....4½
Crucible plow steel, in slabs.....4½

**Bessemer and Open-hearth.**

Spring.....3 c
Spring spiral and taper, cut to lengths.....3½
Tire, 2-16 thick and above.....2½c
Toe calk.....3 c
Plow .....2½c
Axle billets.....2 c
Sleigh shoes .....2½c
Cutter shoe, cut to length and tapered.....3c
Scythe back steel.....3½c
Grain drill bars.....2½c
Grain drill points.....3½c
Rolling coulter blanks, cut and punched.....6c
Thresher Teeth.....3½
Rolled hammer billets.....2½c
Thresher steel.....2½c

Terms.—Four months 3 per cent. discount for cash, if remitted within 30 days

**Plumbers,' Steam and Gas Fitters' Supplies.**

Grey Iron Fittings.....discount 70
Steam Brass Goods.....discount 65
Water Brass Goods.....discount 60
Galvin Gate Valves.....discount 40
Register Gauge Cocks..... net 50
Steam Gauges.....discount 40
Steam Gauges 5 inches net dial per doz 24 00
Scotch Glass Tubes.....discount 75
Tools.....Special
Soil Pipe & Fittings, Mott's List.....discount 50

**English Steel.**

Best cast.....℔ lb15c
Extra cast..... 16½@17c
Round machinery..... 10c
Circular Saw Plates..... 14c
Swaged, cast..... 16c
Best double shear..... 15c
Blister, 1st quality..... 14c
German steel, best..... 10c
2d quality..... 9c
3rd quality..... 8c
Sheet cast steel, 1st quality..... 15½

**Boiler Rivets.—"Albany."**

½, ⅝, 11-16 and ¾ inches diameter.....4 00
"Standard" ½, ⅝, 11-16 and ¾ inch diam.....4 00

**Rolled Castings.**

Furnace floor and straightening plates.....1½c
Housings and castings not otherwise specified 1⅝c
Guide plates.....2½c
Spindles and coupling boxes.....1¾c
Sand rolls and pinions, large size.....2 c
Sand rolls and pinions, small size.....2½c
Pipe mill castings.....3 c
Rolling mill castings under 50lb..... 2 c
Spur and bevel wheels, large.....3 c
Spur and bevel wheels, small.....3½c
Pulleys up to 30 inches.....4 c
Pulleys over 30 inches.....3½c
Engine castings, light.....3½c
Engine castings, heavy.....2½c

## PIPE, WROUGHT.

Standard Wrought Iron Lap Welded Steam and Gas Pipe.

| | Inside Diameter. Inches. | Weight Per Foot. | Price Per Foot Black. | Price Per Foot Galvan'd | Thickness Inches. |
|---|---|---|---|---|---|
| Butt-Welded. | ⅛... | 24 | 0 03¼ | | .068 |
| | ¼... | 42 | 0 03¾ | 0 05 | .068 |
| | ⅜... | 56 | 0 03¾ | 0 05½ | .091 |
| | ½... | 84 | 0 04¾ | 0 06 | .109 |
| | ¾... | 1 12 | 0 06 | 0 08 | .113 |
| | 1 ... | 1 67 | 0 08 | 0 10½ | .134 |
| | 1¼... | 2 24 | 0 11 | 0 14 | .140 |
| Lap Welded. | 1½... | 2 68 | 0 21 | 0 24 | .145 |
| | 2 ... | 3 61 | 0 26 | 0 30 | .154 |
| | 2½... | 5 74 | 0 42 | 0 47 | .204 |
| | 3 ... | 7 54 | 0 55 | 0 62 | .217 |
| | 3½... | 9 00 | 0 67 | 0 83 | .226 |
| | 4 ... | 10 66 | 0 83 | 1 00 | .237 |
| | 4½... | 12 24 | 1 00 | 1 25 | .246 |
| | 5 ... | 14 50 | 1 20 | 1 50 | .259 |
| | 6 ... | 18 76 | 1 50 | 2 00 | .280 |
| | 7 ... | 23 27 | 2 00 | | .301 |
| | 8 ... | 28 18 | 2 75 | | .322 |
| | 9 ... | 33 70 | 3 70 | | .344 |
| | 10 ... | 40 06 | 4 75 | | .366 |
| | 11 ... | 45 02 | 5 75 | | .375 |
| | 12 ... | 49 00 | 6 50 | | .375 |
| | 13 ... | 54 00 | 7 75 | | .375 |
| | 14 ... | 58 00 | 9 00 | | .375 |
| | 15 ... | ..... | 10 00 | | .375 |

Discount, (car load lots) butt-welded ½ inches to 1¼ inches plain.....45 per cent
Ditto galvanized.....35 per cent
Discounts (car load lots) lap-welded 1½ inches to 15 inches plain.....62½ per cent
Ditto galvanized.....45 per cent
Discounts on less than car lots 2½ per cent, less.
Discounts on pipe cut to specified lengths depends on size and waste, ordinarily 5 per cent lower than random.

**Boiler Tubes.**

Discount.....55 per cent

## SCRAP IRON AND OLD METAL

Net Ton.

No. 1 R. R. wrought scrap.....$20 00
No. 1 wrought scrap..... 18 00
No. 1 Machine cast scrap..... 13 00
Stove plate (free from burnt iron)..... 10 50
Grate bars..... 11 00
Pipes and flues (Clean)..... 13 00
Tank iron..... 12 50
Hoop and band iron..... 10 00
Iron axles ..... 25 00
Light sheet iron ..... 10 00
Axle turnings ..... 16 00
Wrought turning (free from cast) ..... 13 00
Wrought iron, oily drillings..... 11 00
Cast borings..... 10 00
Malleable iron..... 10 50
Uncut wrought iron boilers..... 10 00
Steel boiler plates ..... 14 50
Old iron T rails.....gross tons $23 00
Old steel rails ..... 22 00
Car wheels ..... 17 50
Old copper .....per lb 7
No. 1. H. red Brass..... 8½
Heavy yellow brass..... 6½
Light yellow Brass..... 6
Scrap Zinc ..... 3
Tea Lead ..... 3
Heavy Lead ..... 3¼

## COAL.

WHOLESALE.

Wholesale f. o. b. cars at Cleveland:

Carbon Hill and Monday Creek .....$2 10@2 25
Massillon..... 2 50@2 65
Palmyra, lump.....2 75@2 90
Brier Hill.....2 75@3 00
Pittsburgh..... 2 25@2 50
Salineville.....2 00@2 25
Tuscarawas.....2 00@2 25
New Hazelton..... 2 00
New Hazelton, mix..... 1 15@1 20
" " nut..... 1 75@1 85
Connotton.....2 00@2 25
Connotton, mix..... 1 20
" nut.....1 75@1 85
Anthracite grate..... 4 37
Anthracite egg..... 4 46
Anthracite stove..... 4 87
Anthracite chestnut..... 4 69

RETAIL.—Delivered.

Massillon Lump..... 3 65
" Nut..... 3 40
Carbon Hill and Monday Creek, lump..... 3 50
Carbon Hill and Monday Creek, nut..... 3 25
Straitsville, lump..... 3 40
Straitsville, nut..... 3 15
Palmyra Lump.....3 75@4 00
New Hazelton Lump..... 2 75
New Hazelton Nut..... 2 50
Osnaburg Lump ..... 2 75
Osnaburg Nut. ..... 2 50
75c less on cars by car load.
Anthracite Stove and Chestnut..... 5 75
Egg and grate..... 5 50

## OILS.

Pure Oils. Packages included.

Sperm, winter bleached per gal.....1 15@1 20
Whale, winter bleached per gal.....60@65
Straits .....37@40
Bank .....35@38
Lard oil, extra W. S.....53@58
do No. 1 do.....45@48
do No. 2 do.....40@43
Tallow oil.....60@65
Neatsfoot oil, pure.....90@$1 00
do No. 1.....65@75
Linseed oil, raw .....46@49
do do boiled .....49@52
Cotton seed oil, white.....47@50
do do yellow.....48@53
West Virginia lubricating 28 deg .....10c@15c
Paraffine oil, winter pressed.....15@18
Capitol Cylinder..... 35
Model do ..... 30
Eldorado Engine ..... 23
Turpentine, per gal..... 33
Leader Cylinder ..... 70


## WHEELING & LAKE ERIE

TIME TABLE—IN EFFECT JUN. 14, 1886.

Central Standard Time.

| EASTWARD. | No. 5. | No. 7. | No. 9.* | No. 1.* |
|---|---|---|---|---|
| Toledo.....lv | 7 45 AM | 12 30 PM | 4 45 PM | ..... |
| Oak Harbor...ar | 8 43 | 1 22 | 5 38 | ..... |
| Fremont..... | 9 07 | 1 47 | 6 02 | ..... |
| Clyde..... | 9 23 | 2 03 | 6 18 | ..... |
| Bellevue ..... | 9 38 | 2 18 | 6 32 | ..... |
| Monroeville ..lv | 9 57 | 2 32 | 7 01 | 1 35 AM |
| Norwalk ..... | 10 13 | 2 50 | 7 20 | 1 50 |
| Wellington ..... | 11 03 | 3 45 | 9 00 | 2 32 |
| Creston.....ar | 11 52 | 4 33 | 10 45 PM | 3 15 |
| Orrville.....ar | 12 20 PM | 5 05 | 11 45 AM | 3 45 * |
| Orrville.....lv | 12 40 | 5 05 | 6 00 | 6 00 AM |
| Massillon.....ar | 1 20 | 5 45 | 6 40 | 6 40 |
| Massillon.....lv | 1 20 | 5 45 | 6 40 | 6 40 |
| Valley Junc.lv. | 2 10 | 6 45 | 8 00 | 8 00 |
| Sherrodsville... | 2 40 | 7 15 PM | 9 00 | 9 00 |
| Canal Dover..... | 2 38 PM | ..... | 8 00 | 8 00 AM |
| New Comerst'n | 3 27 | ..... | 8 47 | 8 47 |
| Cambridge..... | 4 30 | ..... | 9 45 | 9 45 |
| Macksburg ..... | 6 10 | ..... | 11 38 | 11 38 |
| Marietta.....ar | 7 20 PM | ..... | 12 50 PM | 12 50 PM |

| WESTWARD. | No. 6. | No. 8. | | |
|---|---|---|---|---|
| Marietta .....lv | 6 20 AM | 2 30 PM | ..... | ..... |
| Macksburg ..... | 7 25 | 3 42 | ..... | ..... |
| Cambridge..... | 8 54 | 5 20 | ..... | ..... |
| New Comerst'n | 9 48 | 6 20 | ..... | ..... |
| Canal Dover..... | 10 28 | 6 55 | ..... | ..... |
| | | | No. 4. | No. 2.* |
| Sherrodsville... | 12 05 PM | 4 30 | 6 45 AM | |
| New Cumberl'd | 12 17 | 5 00 | 7 00 | |
| Valley Junc..... | 12 35 | 7 30 | 7 25 | |
| Massillon..... | 1 20 | 8 45 | 8 12 | |
| Orrville.....ar | 1 55 | 9 55 | 8 50 | |
| Orrville.....lv | 2 00 | 10 15 * | 8 50 | |
| Creston..... lv | 2 30 | 10 45 | 9 22 | |
| Wellington ..... | 3 18 | 11 28 | 10 10 | |
| Norwalk..... | 4 10 | 12 10 AM | 11 25 | 7 25 AM |
| Monroeville ..... | 4 22 | 12 25 * | 11 37 | 7 37 |
| Bellevue..... | 4 40 | ..... | 11 55 | 7 53 |
| Clyde..... | 4 56 | ..... | 12 10 PM | 8 08 |
| Fremont..... | 5 13 | ..... | 12 30 | 8 25 |
| Oak Harbor..... | 5 41 | ..... | 12 55 | 8 48 |
| Toledo.....ar | 6 35 PM | ..... | 1 55 PM | 9 45 AM |

| 29. | 27. | | Norwalk & Huron. | | 26. | 28. |
|---|---|---|---|---|---|---|
| P. M. | A. M. | | | | A. M. | P. M. |
| 5 15 | 11 40 | ..... | ar..... Huron.....lv | ..... | 6 25 | 2 05 |
| 5 02 | 11 25 | ..... | ...Fries Landing..... | ..... | 6 38 | 2 18 |
| 4 50 | 11 10 | ..... | .....Milan..... | ..... | 6 52 | 2 35 |
| 4 30 | 10 45 | ..... | lv ...Norwalk.....ar | ..... | 7 15 | 3 00 |

* Daily.

M. D. WOODFORD, Gen'l Manager — JAMES M. HALL, Gen'l Pass. Agt. Toledo.

## Scioto Valley Railway

TIME TABLE.

In effect July 19, 1885.

THE SHORT LINE TO ALL POINTS

North and South, East and Southeast, West and Northwest.

TRAINS GOING SOUTH.

| STATIONS. | No. 2. | No. 4. | No. 6. |
|---|---|---|---|
| Columbus.....Lv | 6 25 a.m | 11 45 a.m | 5 30 p.m |
| Valley Crossing... | 6 48 " | 12 08 p.m | 5 52 " |
| Lockbourne ..... | 7 00 " | 12 20 " | 6 06 " |
| Ashville..... | 7 15 " | 12 36 " | 6 24 " |
| Circleville..... | 7 45 " | 1 05 " | 6 50 " |
| Kingston ..... | 8 08 " | 1 32 " | 7 13 " |
| Chillicothe ..... | 8 40 " | 2 05 " | 7 55 " |
| Sharon ..... | 9 22 " | 2 47 " | 8 43 " |
| Waverly..... | 9 32 " | 2 57 " | 8 54 " |
| Piketon ..... | 9 45 " | 3 11 " | 9 08 " |
| Big Run..... | 10 08 " | 3 28 " | 9 25 " |
| Lucasville..... | 10 25 " | 3 46 " | 9 45 " |
| Portsmouth ..... | 10 50 " | 4 10 " | 10 10 " |
| Sciotoville..... | 11 08 " | 4 28 " | 10 27 " |
| Wheelersburg ..... | 11 15 " | 4 34 " | 10 35 " |
| Haverhill ..... | 11 38 " | 4 54 " | 10 55 " |
| Hanging Rock..... | 11 50 " | 5 05 " | 11 05 " |
| Ironton ..... | 12 02 p.m | 5 17 " | 11 17 " |
| Petersburg ..... | 12 15 " | 5 30 " | 11 30 " |
| Ashland.....Ar | 12 50 p.m | 6 05 p.m | 12 05 a.m |

Trains Nos. 2 and 4 daily, except Sunday.
Train No. 6 daily.
Train No. 6 takes supper at Chillicothe.

TRAINS GOING NORTH.

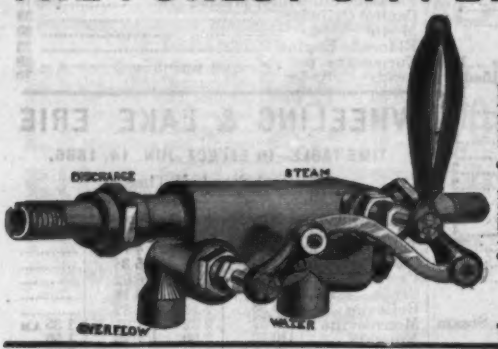
| STATIONS. | No. 1. | No. 3. | No. 5. |
|---|---|---|---|
| Ashland .....Lv | 2 20 a.m | 7 30 a.m | 4 55 p.m |
| Petersburg ..... | 2 55 " | 8 05 " | 5 30 " |
| Ironton ..... | 3 08 " | 8 18 " | 5 43 " |
| Hanging Rock ..... | 3 20 " | 8 30 " | 5 55 " |
| Haverhill..... | 3 31 " | 8 41 " | 6 06 " |
| Wheelersburg ..... | 3 50 " | 9 03 " | 6 26 " |
| Sciotoville..... | 3 56 " | 9 10 " | 6 31 " |
| Portsmouth..... | 4 10 " | 9 25 " | 6 45 " |
| Lucasville..... | 4 34 " | 9 50 " | 7 12 " |
| Big Run..... | 4 51 " | 10 08 " | 7 31 " |
| Piketon..... | 5 07 " | 10 23 " | 7 48 " |
| Waverly..... | 5 21 " | 10 36 " | 8 03 " |
| Sharon ..... | 5 32 " | 10 47 " | 8 15 " |
| Chillicothe ..... | 6 35 " | 11 55 " | 9 00 " |
| Kingston ..... | 7 04 " | 12 22 p.m | 9 27 " |
| Circleville..... | 7 27 " | 12 47 " | 9 50 " |
| Ashville..... | 7 55 " | 1 12 " | 10 13 " |
| Lockbourne ..... | 8 14 " | 1 29 " | 10 29 " |
| Valley Crossing... | 8 26 " | 1 43 " | 10 43 " |
| Columbus.....Ar | 8 50 a.m | 2 05 p.m | 11 05 p.m |

Train No. 1 daily.
Trains Nos. 3 and 5 daily, except Sunday.

COUPON TICKETS, by the best routes and to all principal points in the United States and Canada, can be found at the following Stations: Columbus, Circleville, Kingston, Chillicothe Waverly, Portsmouth, Ironton, A. C. & I. Jc., Ashland.

For further information relative to rates, connections and through time, call on your Ticket Agent, or address J. ROBINSON, Receiver.
JNO. J. ARCHER, Gen'l Pass. & Ticket Ag't, Columbus, Ohio.

## THE FOREST CITY BRASS WORKS,

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This Injector is warranted to lift water 25 feet, and will take water at 125 Degrees Fahrenheit. No adjustment is required for varying steam pressure. Started, stopped and regulated by one lever. Also manufacturer of **BUCKEYE FLUE CLEANER,** nothing superior in the market. Send for price list and catalogue. Specialists in all kinds of **Brass Castings and Babbit Metal.** Estimates furnished on application.

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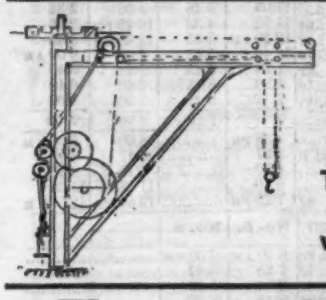
72eow6mo **Cleveland, Ohio.**



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FOR ALL PURPOSES. ALSO

**Turned Shafting, Couplings, Hangers, etc.**

**Gear Cutting.**

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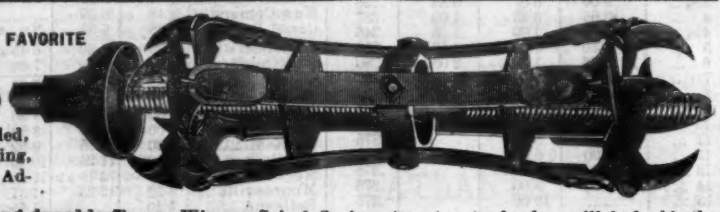
THE ENGINEER'S FAVORITE
**BOILER**
**TubeCleaner**



Double-Headed, Double-Acting, Elastic and Adjustable.

**Is strong and durable;** has no Wire or Spiral Springs to get out of order; will do double the work of any other Cleaner; do it more effectually, and last twice as long. Can be set up while in the tubes to fit tightly, or slackened down to override any uneven surface by turning the handle or rod to which the Cleaner is attached. Write for descriptive Circular and Price List. Ask your supply dealer for it, or address **Kendall Mfg. Co.,** Sole Props. and Manufacturers,
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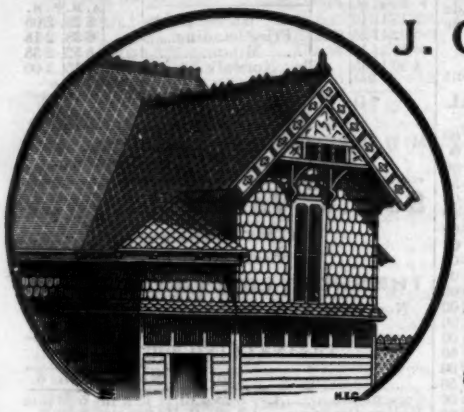

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## Shear, Upset and Punch.

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EVERY MACHINE FULLY TESTED before leaving the factory. MAIN BEARINGS ARE CHILLED Steel gibs in back of slide take up all wear and WE GUARANTEE them to cut ¾ square and round iron and 3 by ½ inch flat bars. They will punch iron ⅞ thick, and will punch a ¾ inch hole in BOILER PLATE 5-16 thick, 6 inches from the edge. Has self-adjusting dies and punches.

The UPSET is admitted by all who have used it to be the SUREST GRIP AND EASIEST WORKED.

Upsets buggy AXLES and ordinary Wagon Tires one inch at a heat. Will upset AXLES or any kind of iron from ⅛ to 1 inch thick.

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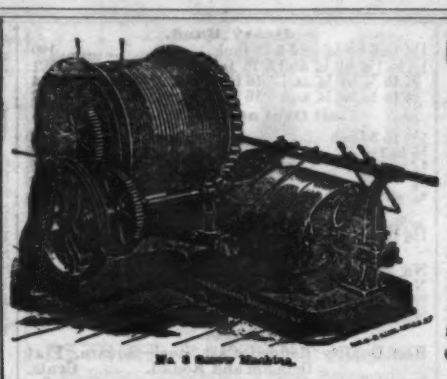
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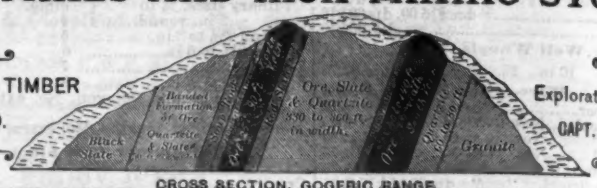


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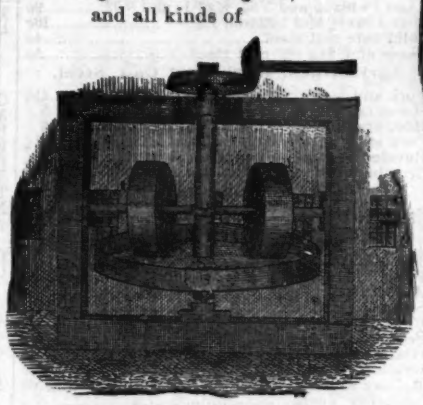

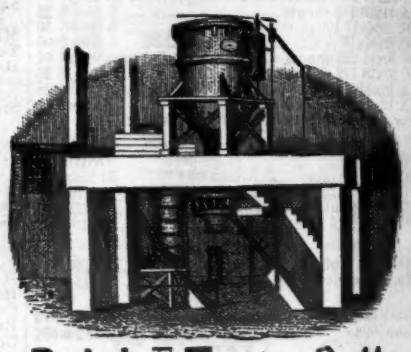

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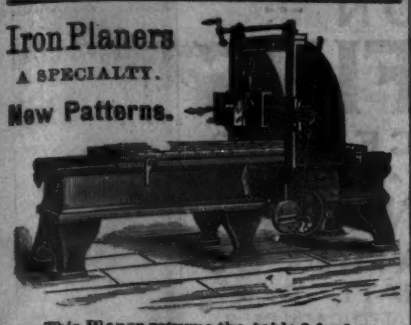

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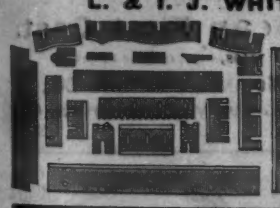

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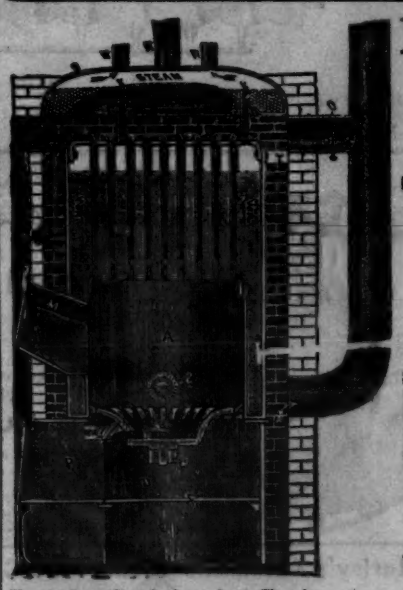

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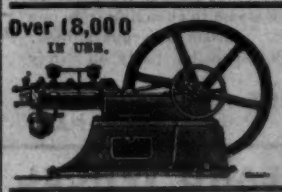

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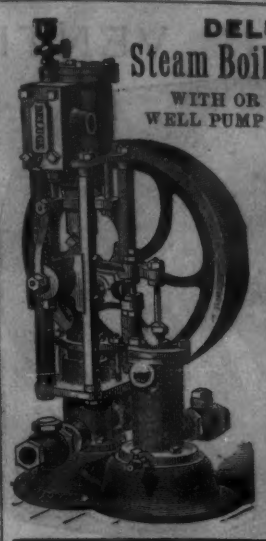

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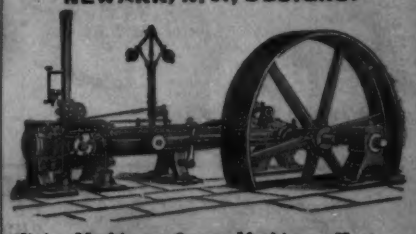

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For all Forms of Mechanical

**AIR MOVEMENT,**

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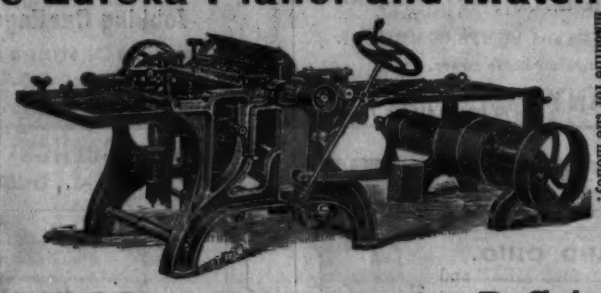

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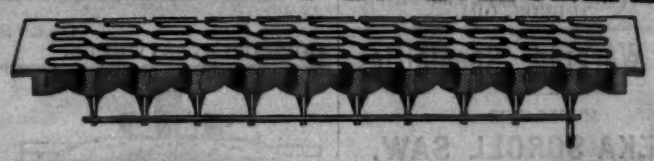

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